IMPORTANT INFORMATION

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1.1 INTENDED USE OF THIS MANUAL

This manual is intended for use only by qualified,STERIS Corporation-certified service personnel.

For further information concerning available training programs, please contact:

STERIS Corporation
Field Service Department
5960 Heisley Road
Mentor, OH 44Ø6Ø
USA
216-354-26ØØ or 1-800-548-4873

The assumption is made that the user of this manual has thoroughly read and is familiar with the SYSTEM 1 Operator's Manual (Publication ID# T1Ø53, Part #612Ø25).

1.2 WARNING AND CAUTION STATEMENTS SUMMARY

The following is a summary of warning and caution statements which must be observed when operating or servicing the SYSTEM 1 Processor.

WARNING ⚠ Statements indicate the potential for danger to personnel.

CAUTION Statements indicate the potential for damage to the SYSTEM 1 Processor.

The **WARNINGS** and CAUTIONS are repeated where applicable throughout this manual.

⚠ Danger: risk of explosion if used in the presence of flammable anesthetics.

⚠ To prevent electrical shock hazard, connect the Processor to hospital grade, GFI protected receptacles only.

⚠ Repairs, adjustments, and procedures described in this manual should be attempted only by qualified, STERIS Corporation-certified personnel.

⚠ The use of inexperienced, unqualified personnel to service the Processor or the installation of unauthorized parts could cause personal injury or result in costly damage.

⚠ The Printed Circuit Board is at line voltage potential.

⚠ Risk of fire. Replace power supply fuse with proper type as marked.

⚠ Do not use the SYSTEM 1 Processor to process devices until it has been properly installed and its electro-mechanical performance verified.

⚠ Prior to use, thoroughly read and be familiar with the SYSTEM 1 Operator's Manual and all additional warning and caution statements in the appendices. The SYSTEM 1 Processor should be operated only by trained personnel in the manner described in this manual.

1.2 WARNING AND CAUTION STATEMENTS SUMMARY (continued)

⚠ STERIS 2Ø has been developed and is intended exclusively for use in the SYSTEM 1 Processor and should be used only in the manner described in this manual.

⚠ STERIS 2Ø Concentrate - Active ingredient, 35% peracetic acid - is CORROSIVE. Avoid contact with skin.

⚠ **STERIS 2Ø use dilution is NOT CORROSIVE, but may cause minor skin irritation in highly sensitive individuals.**

⚠ Do not use leaking or otherwise damaged containers of STERIS 2Ø. Wear goggles or face shield and rubber gloves when handling leaking or damaged containers of STERIS 2Ø.

⚠ Do not attempt to manually open the sealed containers of STERIS 2Ø.

⚠ Review, be familiar with, and maintain in department safety files the STERIS 2Ø (STERIS 2Ø) Material Safety Data Sheet.

⚠ Thoroughly clean and mechanically prepare devices according to manufacturer's written instructions prior to processing. Failure to clean or prepare devices may result in an ineffective sterile process.

⚠ If cycle CANCEL occurs, devices have not been sterilized and adequately rinsed.

CAUTION: To prevent damage to the Processor and possible violation of warranty, refer all servicing to qualified, trained professionals.

CAUTION: To prevent temporary loss of electrical service to the Processor and to any adjacent equipment during Processor operation, connect the Processor only to its own 2Ø amp circuit.

CAUTION: To prevent damage to the Processor, and potential fluid leakage, assure that sterile filter is installed and filter housing cap is securely tightened. Never operate Processor without filter installed.

1.2 WARNING AND CAUTION STATEMENTS SUMMARY (continued)

CAUTION: To prevent damage to the Processor, potential fluid leakage, and failure of the sterile filter membrane, limit inlet water pressure to 345 kPa (5Ø psi).

CAUTION: To avoid permanent damage to the printer, do not attempt to clear or dislodge paper jams in printer by use of mechanical instruments, such as tweezers. Refer such problem to qualified service technician. Paper jam kit P/N 2ØØ276 can be obtained from customer service to dislodge jam.

CAUTION: To avoid jamming of paper in printer, requiring factory service to correct, do not force paper into printer mechanism and do not attempt to feed uneven, tattered, wrinkled paper.

CAUTION: To prevent flow and drain problems, support surface must be level.

CAUTION: To prevent malfunction and damage to Processor electronics, assure free air flow to the bottom of the Processor.

CAUTION: To prevent damage to Processor inlet valve, assure that 9Ø° fitting does not cross-thread onto valve threads during installation.

CAUTION: To prevent mixing of unchecked hot and cold water supplies in facilities feeding sink faucets, open only the hot water shut-off to supply the Processor. In the event the hot water faucet supply is excessively hot, either reduce the water temperature at its source or install a mixing valve system (available from STERIS A1ØØ2).

CAUTION: To prevent programmed cycle-termination in DIAGNOSTICS mode, assure that inlet water is at a minimum temperature of 4Ø° C (1Ø4° F).

CAUTION: To prevent programmed cycle-termination, and potential damage to delicate instruments, assure that inlet water temperature does not exceed approximately 5Ø°C (122°F).

CAUTION: To prevent incomplete draining of the Processor, and subsequent inadequate rinsing of the Processor and instruments, and to prevent back pressure which could cause damage to the Processor and cause fluid leakage, do not install restrictive adapters to the distal end of the drain hose and do not lengthen hose. Do not kink the drain hose. Provide a continuously descending grade from Processor to facilities drain. Do not allow hose to loop; cut off excess length if necessary.

Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.
MSDS No. 79-21-0

STERIS®

Identity (As Used on Label and List)	Chemical Name / Chemical Family
STERIS 20™ Sterilant Concentrate EPA Reg. # 58779-1	Acid – Peroxyacetic Acid/Organic Peroxide Salt – Inactive Builders/Salts

SECTION I

Manufacturer's Name	Emergency Telephone Number
STERIS Corporation	1-800-424-9300 (CHEMTREC)
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
5960 Heisley Road Mentor, Ohio 44060	1-216-354-2600 (STERIS)
	Date Prepared
	8-94
	Signature of Preparer (optional)

NFPA 704 HAZARD RATING

Hazard	Rating	
Health	3	
Fire	1	Special Oxidizer
Reactivity	3	

Least 0, Slight 1, Moderate 2, High 3, Extreme 4

SECTION II — HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Peroxyacetic acid (35%) CAS:79-21-0	Not Listed	Not Listed	10 PPM TWA-Acetic Acid	

SECTION III — PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	Specific Gravity (H_2O = 1)
Decomposes	1.13 at 20°C
Vapor Pressure (mm Hg.) @ 25° C	Melting/Freezing Point
20 mm	-44°C (-47°F)
Vapor Density (AIR = 1)	Evaporation Rate (Butyl Acetate = 1)
N/A	above 1
Solubility in Water, % by Weight	Appearance and Odor
100%	Acid: Colorless liquid, sharp, pungent vinegar like odor. Salts: White granules.

SECTION IV — FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Flammable Limits	LEL	UEL
N/A	N/A	N/A	N/A

Extinguishing Media	Autoignition Temperature
Use Water Only	218°C (424°F)

Special Fire Fighting Procedures
Do not enter any enclosed/confined fire space without proper protective equipment, including a self contained breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards
Stabilized peracetic acid decomposes under fire conditions to release oxygen that intensifies the fire.

SECTION V — REACTIVITY DATA

Stability			Conditions to Avoid
Stable (contamination or heat can initiate decomposition).	Unstable		Open Flames and Elevated Temperatures. Moisture.
	Stable	X	

Incompatibility (Materials to Avoid)
Terpenes, primary alcohols, reducing & oxidizing agents.

Hazardous Decomposition or Byproducts
Acetic acid and oxygen that support combustion. Acrid smoke & fumes emitted when heated to decomposition.
By Fire; Carbon dioxide, carbon monoxide, nitrogen oxide.
HCN in reducing atmosphere.

Hazardous Polymerization			Conditions to Avoid
	May Occur		N/A
	Will Not Occur	X	

SECTION VI — HEALTH HAZARD DATA

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards *(Acute and Chronic)*

Acute: Vapor; Extremely irritating, direct contact with liquid may cause severe burns & irreversible eye damage.
Chronic: Acid may increase incidence of skin tumors when administered simultaneously with known carcinogen to mice.

Carcinogenicity	NTP?	IARC Group 1 or 2?	OSHA?
	No	No	No

Toxicology

Eye Contact: Corrosive
Skin Contact: Corrosive
Skin Absorption: LD_{50} >200 mg/kg at 17%
Inhalation: LC_{50} 524 mg/M3 (Mouse, 1 Hour)
Fish Toxicity: 96 Hour LC_{50} (fathead minnow) >1,000 mg/l at use dilution.

For further information on use dilution toxicology, see The STERIS SYSTEM 1 Technical Data Monagraph.

Signs and Symptoms of Exposure

Eyes: Contact causes irreversible eye damage, including blindness.
Skin Contact: Corrosive; may cause severe burns; absorption is moderately hazardous.
Inhalation: Vapor/mist will irritate nose, throat, and lungs but will usually subside when exposure ceases; coughing and breathing difficulty.

Medical Conditions Generally Aggravated by Exposure

Emergency and First Aid Procedures

ALL PROCEDURES TO BE FOLLOWED BY PHYSICIAN CONTACT!
Skin: Wash immediately with water, remove contaminated clothing.
Eyes: Wash opened eye with water for 15 minutes. Call Opthamologist.
Inhalation: Move subject to fresh air; if needed apply artificial respiration and oxygen.
Ingestion: Do not induce vomiting. Drink a large quantity of egg whites, gelatin solution or if not available, large quantities of water.

SECTION VII — PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled

(1) Increase ventilation.
(2) Shut off ignition sources.
(3) Put on protective eye goggles, gloves and apron.
(4) Flush spilled materials with large quantities of water until all materials are dissolved or diluted by at least 20 volumes.
(5) Remove unopened containers to a sink of water and submerge, open and dilute.

Waste Disposal Method

Dilute with at least 20 volumes of water & dispose of according to federal, state, & local regulations. Do not allow undiluted material to enter storm or sanitary sewer systems.

Precautions to Be Taken in Handling and Storage

Store in a cool, dry area (<86°F). Avoid heat, moisture, sunlight or contaminating substances. Avoid physical damage to STERIS 20 containers.

Other Precautions

Use STERIS 20 Sterilant Concentrate only in STERIS SYSTEM 1 Processors.
Follow Operator Manual Instructions.

SECTION VIII — CONTROL MEASURES

Respiratory Protection *(Specify Type)*

Self-contained breathing apparatus approved by NIOSH / OSHA.

Ventilation		
Ventilation 10 ppm for 8 hours	Local Exhaust: Or equally effective ventilation.	Special: N/A
	Mechanical *(General)*: N/A	Other: N/A

Protective Gloves: Long rubber gloves.

Eye Protection: Chemical type goggles and face mask.

Other Protective Clothing or Equipment

Impervious boots and apron and/or clothing.

Work/Hygienic Practices: Wash hands and face after contact.

Disposal: Dilute 1:20 with clean water.

DISPOSAL OF STERIS 2Ø

SPILLAGE OF STERIS 2Ø USE DILUTION

While accidental spillage of the **STERIS 2Ø** use dilution is an unusual event, it may occur. It is important not only to appropriately clean up the spill but also to determine the cause of the problem and correct it.

STEP 1. Press the CANCEL button.

STEP 2. When cancellation is complete, unplug the Processor.

STEP 3. Increase ventilation to remove any strong, tear-producing vapors.

STEP 4. Put on protective attire to include waterproof gloves, apron, chemical goggles or face shield. Wear protective attire for the entire procedure.

STEP 5. Rinse to a non-blocked (clear) floor drain if available;

OR

Wipe liquid up with absorbent towels, sponges or mops. Thoroughly rinse the area and dry.

⚠

Towels, sponges or mops, whether reusable or disposable used to clean up spillage, must be thoroughly rinsed before disposal into the appropriate receptacles (i.e., trash or soiled linen).

STEP 6. Dispose of the STERIS 2Ø in the Processor. Follow the instructions for "DISPOSAL OF STERIS 2Ø-ONE CONTAINER."

DISPOSAL OF STERIS 2Ø (continued)

ONE CONTAINER

STEP 1. Increase ventilation to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, chemical goggles or face shield. Wear the protective attire during the entire procedure.

STEP 4. Remove individual box and container and submerge in a sink filled with at least 12 inches of water.

STEP 5. WHILE SUBMERGED, remove container from box. Rinse box in water and drain. Discard box following procedures for clean paper waste.

STEP 6. Open the submerged container manually to dilute the remaining acid. Using a part of scissors, insert in the cross section in the top center of the container (aspirator probe insertion point) and cut both the inner and out cups in half. **AVOID SPLASHING OR SPRAYING.** Dilute both liquid (peracetic acid) and powders in the water.

STEP 7. Drain sink and rinse residual powders away.

STEP 8. Rinse inner and outer cups with copious amounts of running water (at least one gallon per cup).

STEP 9. Thoroughly drain the containers and discard following procedures for clean plastic/paper waste.

DISPOSAL OF STERIS 2Ø (continued)

MORE THAN ONE CONTAINER

STEP 1. Increase ventilation. Use fans, open doors, etc., to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, and eye/face wear shield or self-contained breathing apparatus (if available). Wear the protective attire during the entire procedure.

STEP 4. Remove boxes (with containers) or case to a large rinse area (floor drain or large sink).

STEP 5. Rinse with at least 2Ø gallons of water (2-3 minutes of open tap).

⚠

DO NOT ATTEMPT TO MANUALLY OPEN ANY LEAKING CONTAINER UNTIL THE OUTSIDE OF THE CONTAINERS AND BOXES ARE THOROUGHLY RINSED.

STEP 6. Remove an individual box and container and submerge in a sink filled with at least 12 inches of water.

STEP 7. WHILE SUBMERGED, remove container from the box. Rinse box in water and drain. Discard box following procedures for clean paper waste.

STEP 8. Open the submerged container manually to dilute the remaining acid. Using a pair of scissors, insert the tip into the top cross section in the center of the container (aspirator probe insertion point) and cut both the inner and outer cups in half. **AVOID SPLASHING OR SPRAYING.** Dilute both liquid (peracetic acid) and powders in the water.

STEP 9. Drain sink and wash residual powders away.

STEP 1Ø. Rinse inner and outer cups with copious amounts of running water (at least one (1) gallon per cup).

STEP 11. Thoroughly drain the container and discard following the procedures for clean plastic/paper waste.

DISPOSAL OF STERIS 2Ø (continued)

IN A "NO WATER AVAILABLE" AREA

STEP 1. Increase ventilation to the area - open truck or warehouse doors, use fans to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, and chemical goggles/face shield or self-contained breathing apparatus.

STEP 4. Seal boxes with containers into plastic bag(s) and take to a water source.

⚠ **DO NOT ATTEMPT TO MANUALLY OPEN ANY LEAKING OR BROKEN CONTAINER UNTIL WATER IS AVAILABLE.**

When water is available, follow the procedure for "DISPOSAL OF STERIS 2Ø-MORE THAN ONE container".

STERIS Material Safety Data Sheet #S2020D
STERIS 20D™ Sterilant
Effective Date: 01/15/96

STERIS®

SECTION I - PRODUCT IDENTIFICATION

Manufacturer's Name STERIS Corporation	Emergency Telephone Number 703-527-3887 800-424-9300 (CHEMTREC)
Address 5960 Heisley Road Mentor, Ohio 44060 USA	Telephone Number for more information 216-354-2600 (STERIS)

Identity
STERIS 20D™ Sterilant
EPA Reg. #58779-2

Product Use
Sterilant (for use with STERIS Processors)

SECTION II - HAZARDOUS INGREDIENTS

Hazardous Components (Specific Chemical Identity; Common Name(s))	C.A.S. NO.	OSHA PEL	ACGIH TLV	Other Limits Recommended
Acetylsalicylic acid (Aspirin)	50-78-2	5mg/m³, TWA	5mg/m³, TWA	Not available
Sodium perborate monohydrate (Perborate)	10332-33-9	Not listed	10mg/m³, TLV per 40 hr. week	Not available
Proprietary ingredient < 1.5% by weight		Not listed	Not listed	Not available

SECTION III - PHYSICAL / CHEMICAL DATA

Boiling Point 140°C, decomposes	Specific Gravity (H_2O = 1) Not applicable
Vapor Pressure (mm Hg) Not applicable	Melting Point >96°C, decomposes
Vapor Density (AIR = 1) Not applicable	Evaporation Rate (Butyl Acetate = 1) Not applicable

Solubility in Water
0.25 mg/100 ml at 15°C

Appearance, Color and Odor
White crystalline/granular. Slight characteristic odor (aspirin).

Odor Threshold Not applicable	Coefficient of Water/Oil Distribution Not applicable

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) >171°C (open cup)	Flammable Limits (Upper and Lower Limits) Not applicable

Extinguishing Media
Any suitable for fire in surrounding area

NFPA 704 HAZARD RATING

Health (Blue)	2
Fire (Red)	1
Reactivity (Yellow)	2

Special Fire Fighting Procedures
Wear self-contained breathing apparatus and full protective clothing when fighting a fire containing STERIS 20D Sterilant.

Unusual Fire and Explosion Hazards
Damp chemical decomposes under fire conditions to release oxygen that intensifies the fire.

Hazardous Combustion Products
Not applicable

Explosion Data
This product is not an explosive.

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SECTION V - REACTIVITY DATA

Stability
Stable

Conditions to Avoid
Exposure to excessive heat, moisture, oxidizing/reducing agents during storage.

Incompatibility *(Materials to Avoid)*
Strong oxidizers

Hazardous Decomposition or By-products
When exposed to excessive heat, moisture, or oxidizing/reducing agents during storage, may generate nitrogen oxides, hydrogen cyanide, carbon monoxide, carbon dioxide, and low molecular weight hydrocarbons.

Hazardous Polymerization
Will not occur

Storage
Store in a cool dry place

SECTION VI - HEALTH HAZARD INFORMATION

Product Health Hazard
Avoid contact with skin. Direct contact with undissolved powders may cause eye damage, mild skin or respiratory tract irritation. Undissolved powders are corrosive.

Route(s) of Exposure
- Eye Contact
  Corrosive
- Mucous Membrane
  Irritant
- Skin Contact
  Irritant
- Skin Absorption
  No significant hazard
- Ingestion
  May cause central nervous system depression

Carcinogenicity

NTP?	IARC Monographs?	OSHA Regulated?
No	No	No

SECTION VII - PREVENTATIVE MEASURES UNDER NORMAL USE CONDITIONS

Respiratory Protection (Specify Type)
Not applicable

Ventilation
Use in a well ventilated area

Protective Gloves
Water impervious gloves

Eye Protection
Not applicable

Other Protective Clothing or Equipment
Not applicable

Work/Hygienic Practices
Wash bodily areas with water after contact. Do not smoke.

SECTION VIII - FIRST AID MEASURES

Signs and Symptoms of Exposure
Direct contact with undissolved powders may cause eye damage, mild skin or respiratory tract irritation.

Emergency and First Aid Procedure

IF INHALED
Leave contaminated area, breath fresh air. If breathing discomfort occurs give oxygen. Seek medical attention.

IF INGESTED
Drink large amounts of water. Do not induce vomiting. Seek medical attention.

IF IN EYES
Flush with water for at least 15 minutes, lifting the upper and lower eyelids. Seek medical attention.

IF ON SKIN
Wash thoroughly with water. Brush off and remove contaminated clothing. If irritation occurs, seek medical attention.

SECTION IX - PRECAUTIONS FOR SAFE HANDLING DURING DISPOSAL

Respiratory Protection (Specify Type)
While disposing of a leaking container, wear a NIOSH/MSHA-approved respirator when adequate ventilation is not available to avoid any irritation from inhaled powders.

Protective Gloves
Water impervious gloves

Eye Protection
Goggles or face shield

General Disposal Outside Clinical Settings
Sweep up spilled material and place in a sealed container. Dispose of this container in accordance with federal, state and local regulations. Flush the STERIS 20D container with copious amounts of water; dispose of this container in ordinary trash.

Clinical Disposal
Dispose of in accordance with the applicable STERIS Operator Manual.

DISPOSAL OF STERIS 2ØD

SPILLAGE OF STERIS 2ØD USE DILUTION

While accidental spillage of the **STERIS 2ØD** use dilution is an unusual event, it may occur. It is important not only to appropriately clean up the spill but also to determine the cause of the problem and correct it.

STEP 1. Press the CANCEL button.

STEP 2. When cancellation is complete, unplug the Processor.

STEP 3. Increase ventilation to remove any strong, tear-producing vapors.

STEP 4. Put on protective attire to include waterproof gloves, apron, chemical goggles or face shield. Wear protective attire for the entire procedure.

STEP 5. Rinse to a non-blocked (clear) floor drain if available;

OR

Wipe liquid up with absorbent towels, sponges or mops. Thoroughly rinse the area and dry.

⚠ **Towels, sponges or mops, whether reusable or disposable used to clean up spillage, must be thoroughly rinsed before disposal into the appropriate receptacles (i.e., trash or soiled linen).**

STEP 6. Dispose of the STERIS 2ØD in the Processor. Follow the instructions for "DISPOSAL OF STERIS 2ØD-ONE CONTAINER."

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(4/96)

DISPOSAL OF STERIS 2ØD (continued)

ONE CONTAINER

STEP 1. Increase ventilation to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, chemical goggles or face shield. Wear a NIOSH/MSHA-approved respirator when adequate ventilation is not available to avoid any irritation from inhaled powders. Wear the protective attire during the entire procedure.

STEP 4. Remove individual box and container and submerge in a sink filled with at least 3Ø cm (12 inches) of water.

STEP 5. WHILE SUBMERGED, remove container from box. Rinse box in water and drain. Discard box following procedures for clean paper waste.

STEP 6. Open the submerged container by releasing the inner and outer cup plugs, the inner cup plug with an object similar to probe assembly tip, the outer cup by forcing the outer cup upward, and flush with water until sterilant is dissolved. **AVOID SPLASHING OR SPRAYING.**

STEP 7. Rinse inner and outer cups with copious amounts of running water, at least four liters (one gallon) per cup.

STEP 8. Thoroughly drain the containers and discard following procedures for clean plastic/paper waste.

STEP 9. Drain sink and rinse residual powders away.

DISPOSAL OF STERIS 2ØD (continued)

MORE THAN ONE CONTAINER

STEP 1. Increase ventilation. Use fans, open doors, etc., to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, and chemical goggles or a face shield. Wear a NIOSH/MSHA-approved respirator when adequate ventilation is not available to avoid any irritation from inhaled powders. Wear the protective attire during the entire procedure.

STEP 4. Remove boxes (with containers) or case to a large rinse area (floor drain or large sink).

STEP 5. Rinse with water (2-3 minutes of open tap).

STEP 6. Remove an individual box and container and submerge in a sink filled with at least 3Ø cm (12 inches) of water.

STEP 7. WHILE SUBMERGED, remove container from the box. Rinse box in water and drain. Discard box following procedures for clean paper waste.

STEP 8. Open the submerged container by releasing the inner and outer cup plugs, the inner cup plug with an object similar to probe assembly tip, the outer cup by forcing the outer cup upward, and flush with water until sterilant is dissolved. **AVOID SPLASHING OR SPRAYING.**

STEP 9. Rinse inner and outer cups with copious amounts of running water, at least four liters (one gallon) per cup.

STEP 1Ø. Thoroughly drain the container and discard following the procedures for clean plastic/paper waste.

STEP 11. Drain sink and wash residual powders away.

DISPOSAL OF STERIS 2ØD (continued)

IN A "NO WATER AVAILABLE" AREA

STEP 1. Increase ventilation to the area - open truck or warehouse doors, use fans to remove any strong, tear-producing vapors.

STEP 2. Shut off ignition sources and DO NOT SMOKE.

STEP 3. Put on protective attire to include waterproof gloves, apron, and chemical goggles/face shield or self-contained breathing apparatus.

STEP 4. Seal boxes with containers into plastic bag(s) and take to a water source.

⚠ **DO NOT ATTEMPT TO MANUALLY OPEN ANY LEAKING OR BROKEN CONTAINER UNTIL WATER IS AVAILABLE.**

When water is available, follow the procedure for "DISPOSAL OF STERIS 2ØD-MORE THAN ONE container".

TRADE SECRET LICENSE AGREEMENT

This Agreement is made between STERIS Corporation, 596Ø Heisley Road, Mentor, Ohio 44Ø6Ø ("STERIS"),_________ ("Customer") and _________ ("Trainee").

WHEREAS, STERIS has developed expertise in the sale and service of biomedical equipment used for sterile processing of immersible surgical and diagnostic scopes, cameras, instruments, and accessories;

WHEREAS, STERIS has developed procedures and know how for use in servicing its biomedical equipment;

WHEREAS, STERIS has documented and compiled some of those procedures and know how in a service manual (the "Service Manual");

WHEREAS, Customer has acquired certain biomedical equipment from STERIS and desires to use Trainee to service the equipment and also desires to obtain a copy of the Service Manual;

WHEREAS, proper and efficient servicing of the STERIS equipment requires access to confidential and proprietary information developed and owned by STERIS;

NOW, THEREFORE, in consideration of the mutual promises in this Agreement, the parties, intending to be legally bound, agree as follows:

1. Customer and Trainee acknowledge that STERIS has developed training, instructional materials and service procedures and Service Manuals which incorporate trade secret information owned by STERIS (the "Trade Secret Information"). Customer and Trainee also acknowledge that STERIS Trade Secret Information has been maintained as confidential by STERIS, is highly valuable, and that disclosure of it to third parties or unauthorized use of it by Trainee or Customer will cause STERIS serious competitive harm. Customer and Trainee will not contest STERIS's claim of trade secret status for its training, instructional materials and service manuals and procedures.

2. STERIS will provide Trainee with access to its Trade Secret Information, including the necessary training, instructional materials and service procedures and Service Manuals and procedures to enable Trainee to service the biomedical equipment which Customer has acquired from STERIS.

3. STERIS grants to Customer and Trainee a license to use its Trade Secret Information for the repair and service of STERIS equipment owned by Customer. No license is granted to Customer or Trainee to make any other use of STERIS Trade Secret Information.

4. Customer will pay to STERIS a training and trade secret license fee in the amount of $_________________ .

5. Customer acknowledges that the Service Manual is intended for use only by qualified service personnel who have received the appropriate training from STERIS. Customer acknowledges that servicing of STERIS biomedical equipment by untrained individuals may damage the equipment and creates a risk of personal injury to operators and patients. Any attempt to service STERIS biomedical equipment by any individual who has not received the appropriate training from STERIS will immediately invalidate any warranty applicable to the equipment.

6. If Customer permits any individual to use the Service Manual to attempt to service or repair any item of STERIS biomedical equipment, then Customer will defend and indemnify STERIS for any claims asserted by any party premised on an alleged defect in or malfunction of the equipment. The obligation to defend and indemnify will not apply if Customer can prove by clear and convincing evidence that the alleged defect or malfunction is attributable to actions or omissions of STERIS.

7. Customer and Trainee shall not disclose to any third parties any Trade Secret Information. Customer and Trainee shall use Trade Secret Information exclusively for the repair and service of STERIS biomedical equipment owned by Customer.

8. At such time as Customer no longer owns any STERIS biomedical equipment, Customer and Trainee shall immediately return to STERIS all Trade Secret Information, as well as any copies made of that information and any other material, including handwritten notes, made or derived from that information.

9. Trainee shall not for a period of eighteen months following termination of his or her employment with the Customer, whether by resignation, or otherwise, engage, either directly or indirectly, as an employee, officer, director, shareholder, partner or in any other capacity in a business which is competitive with the business of STERIS. If Trainee violates this covenant, the eighteen month period will begin to run from the date of a judicial decree enforcing this Agreement.

1Ø. Customer and Trainee acknowledge that the covenants of this Agreement are reasonably necessary to protect the goodwill, trade secrets and other business interests of STERIS and they will cause Customer and Trainee no undue hardship. Customer and Trainee acknowledge that any breach of these covenants will cause STERIS immediate irreparable harm for which injunctive relief would be necessary.

11. Customer and Trainee acknowledge that the restrictive covenants of this Agreement are the essence of this Agreement. They shall be construed as independent of any other provision in this Agreement, and the existence of any claim or cause of action of Customer or Trainee against STERIS, whether predicated on this Agreement or otherwise, shall not constitute a defense to the enforcement by STERIS of the restrictive covenants.

12. If, in the reasonable opinion of STERIS, Trainee does not satisfactorily complete the necessary training or for some other reason is not qualified to service STERIS equipment, STERIS may terminate the license granted in this Agreement as to Trainee immediately upon written notice. Notwithstanding any termination by STERIS pursuant to this paragraph, Trainee's obligations under paragraphs 9 through 11 of this Agreement shall continue.

13. This Agreement constitutes the entire understanding between the parties with respect to its subject matter and supersedes all prior agreements and understandings, written or oral, with respect to its subject matter.

14. If any provision of this Agreement is held to be invalid or unenforceable by a Court of competent jurisdiction, such holding shall not invalidate any of the other provisions of the Agreement. The parties intend that any such provision shall be severed from the Agreement and that the Agreement shall be enforced to the full extent permitted by law.

15. This Agreement shall be binding upon and inure to the benefit of the heirs, executors and administrators of Trainee, and to the subsidiaries, affiliates, successors and assigns of STERIS and Customer.

16. This Agreement is entered into in relation to training needed to service biomedical equipment which Customer has acquired from STERIS and said training shall be conducted at the STERIS facilities in Mentor, Ohio. This Agreement shall be governed by the laws of the State of Ohio, and both parties consent to venue and personal jurisdiction over them in the courts of that state, including the federal courts, for purposes of construction and enforcement of this Agreement.

17. Any individual signing on behalf of a corporate party warrants that he or she has authority to bind that party to the obligations expressed in this Agreement. Trainee ACKNOWLEDGES HAVING READ AND UNDERSTOOD THIS ENTIRE AGREEMENT.

STERIS CORPORATION

By: ______________________________

Date: ______________________________

____
CUSTOMER

By: ______________________________

Date: ______________________________

____
TRAINEE

By: ______________________________

Date: ______________________________

P/N 612Ø19
(4/96)

COMPLETING - CUSTOMER REPAIR REPORT

This report is to be completed by the Customer Biomed performing the service and returned to STERIS Field Service Department.

1. Enter name of Facility.
2. Enter Customer Number.
3. Enter Serial Number of Processor on which service was performed.
4. Enter date service was started.
5. Enter Cycle Count at beginning of service.
6. Enter information for all parts replaced.
7. Enter brief description of symptom(s).
8. Enter brief description of problem(s).
9. Enter brief description of correction(s) performed.
10. Enter any comments or additional information.
11. Enter Biomed/Tech's name and phone number of who performed the services.
12. Enter completion date of the service.

NOTE: In order to initiate and validate warranty on parts ordered from STERIS Corporation and installed by a trained Biomed/Tech., the Customer Repair Report (CRR) must be returned to STERIS Field Service. If CRR is not returned, warranty will begin on the date of shipment of that part.

CUSTOMER REPAIR REPORT

W/O ______

FACILITY NAME : ________________________________

CUSTOMER NUMBER : ________________ SERIAL NUMBER : __________

DATE : _____ _____, 199____ CYCLE COUNT : __________

Please complete and send a copy of report with notes to:

STERIS CORPORATION
ATTN: FIELD SERVICE/CRR
5960 HEISLEY ROAD
MENTOR, OH 44060

List all replaced or upgraded parts using STERIS® part numbers.

Qty.	Installed Part #	Recovered Part #	Description	Reason for Replacement	

Symptom: ________________________________

____

____

Problem: ________________________________

____

____

Correction: ________________________________

____

____

Additional Comments: ________________________________

____

____

(Attach all notes to this form)

Work Performed By: (print name) ________________ Phone # ________ Date Completed: ________

STERIS Use Only

FST028
Rev A 04-01-96

SPECIFICATIONS

INDEX

Model 9ØA1/9ØA2
STERIS SYSTEM 1™ PROCESSOR SPECIFICATIONS

PHYSICAL CHARACTERISTICS

Width:	32 in.	(81 cm.)
Depth:	24 in.	(61 cm.)
Height:	13 in.	(33 cm.) lid closed
	32 in.	(81 cm.) lid open
Weight:	115 lbs.	(52 kg.) dry
	15Ø lbs.	(68 kg.) operating
	16Ø lbs.	(72 kg.) shipping

ELECTRICAL REQUIREMENTS

	9ØA2	9ØA1
Voltage:	12Ø VAC Nominal (+5%, -1Ø%)	22Ø-24Ø VAC (± 1Ø%)
Frequency:	6Ø Hz	5ØHz
Current:	15 amps	1Ø amps
Service:	GFI-protected, hospital grade 2Ø-amp outlet	GFI-protected, hospital grade 1Ø-amp outlet
Recommended:	Double outlet 2Ø amp. dedicated from breaker panel.	

WATER REQUIREMENTS

Pressure:	2Ø-5Ø psig (138-345 kpa)
Recommended:	4Ø-5Ø psig (276-345 kpa) for optimum cycle times.
Flow Rate:	1 gpm (3.8 lpm) minimum at 138 kpa (2Ø psig)
Recommended:	4 gpm (15.Ø lpm) at 4Ø psi inlet pressure for optimum cycle times.
Temperature:	11Ø-118°F (43-48°C
Recommended:	115-118°F (46-48°C) for optimum cycle times.
Connection:	3/4-inch male hose connector
Quality:	Potable / Tap water
Drain:	Non-backpressuring
Water Usage:	Approximately 13.3 gal. (5Ø L) per sterile processing cycle.

ENVIRONMENTAL REQUIREMENTS

Room Temperature:	6Ø-9Ø°F(15.5-32°C)
Humidity:	1Ø-9Ø% relative, non-condensing

⚠ Danger: risk of explosion if used in the presence of flammable anesthetics.
Note: above specifications subject to change without notice.

P/N 612019
(4/96)

Patents #4,731,222 U.S.
#4,892,7Ø6 U.S.
#4,885,253 U.S.
#5,Ø37,623 U.S.
#5,Ø77,ØØ8 U.S.
#1,273,774 CANADA
#EPØ23217Ø EUROPE

Other USA and International Patents Pending.
Manufactured in USA
EPA Registration #58779-1
UL Listing E116271
CSA Listing #LR 92287
GS (TUV) Approval #Ø9Ø7123.Ø1

<u>INSTALLATION / SHIPMENT PREPARATION</u>

<u>INDEX</u>

P/N 612Ø19
(4/96)

SITE PREPARATION GUIDE

STERIS SYSTEM 1™

STERIS

STERIS Corporation
5960 Heisley Road ■ Mentor, OH 44060 USA
216-354-2600
800-548-4873 (800-JIT-4-USE)

STERIS is a registered mark of **STERIS Corporation**.
STERIS 20, **STERIS SYSTEM 1**, the **STERIS PROCESS**, and **JIT** are trademarks of **STERIS Corporation**.

PATENTS #4,731,222 U.S.
#4,892,706 U.S.
#5,037,623 U.S.
#5,077,008 U.S.
#5,091,343 U.S.
#1,273,774 CANADA
#EPO232170 EUROPE

Other U.S. and International Patents Pending

P/N 612022 REV. B
(11/95)

SITE PREPARATION GUIDE

TABLE OF CONTENTS

WARNING: **Danger: Risk of explosion if used in the presence of flammable anesthetics.**

SECTION 1 - INTRODUCTION

The STERIS SYSTEM 1™ Processor is suited for placement in a variety of locations within your facility. This instructional guide will help you select a proper site and complete the steps required for a successful installation.

This guide includes specifications for electrical, plumbing, and drainage with options to fit most situations. Should you experience a situation with the installation of the SYSTEM 1 Processor that is not covered in this Site Preparation Guide, please call STERIS® Field Service at 800-548-4873 (800-JIT-4-USE).

The SYSTEM 1 Processor includes an A1000 Installation Kit and A1550 Water Pre-Filter Assembly. The pre-filter assembly should be located in an area allowing ready access to filters for changing. The installation kit includes drain hose (6 feet) and connectors, fill hose (6 feet) and connectors, and inlet hose (4 feet) and connectors.

NOTE: The responsibility of connecting the STERIS SYSTEM 1 Processor to water supply, electrical supply, and drainage is that of the end user and not of STERIS Corporation or its service personnel.

SECTION 2 - SITE SELECTION AND SPACE REQUIREMENTS

When choosing a location for the SYSTEM 1 Processor, take into account equipment usage, traffic flow and utilities. Review these factors and then determine the optimum location for your installation.

A. A minimum counter width of 38 inches and minimum counter depth of 24 inches is required.

   A minimum height of 32 inches measured from the top of the counter surface is required to ensure proper overhead clearance. (See Attachment A)

B. A hard surface counter or permanently mounted shelf that can safely support 200 pounds is needed.

C. Installation site selection must be within five (5) feet of water, electrical, and drain inlet.

   NOTE: The SYSTEM 1 Processor must be placed at least 18 inches away from any open sink. This is to avoid water vapor being drawn into the unit by the cooling fans.

SECTION 3 - ELECTRICAL REQUIREMENTS

A. The SYSTEM 1 Processor includes a power cord and connector. To prevent overload and loss of any electrical power to critical equipment, it is required that the SYSTEM 1 Processor has a 20 amp, 120 volt dedicated circuit, terminated in a 20 amp hospital grade GFCI (Ground Fault Circuit Interrupter) double receptacle.

Note: Call STERIS Field Service for CSA Certified options.

B. If the power cord of the SYSTEM 1 Processor is routed through a counter or shelf top, a two inch diameter hole is required to allow passage of the plug.

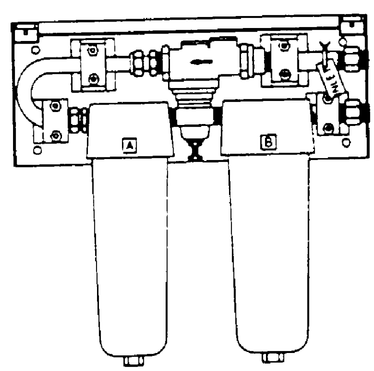
SECTION 4 - WATER REQUIREMENTS

A. The SYSTEM 1 Processor requires a potable water source with the following specifications:

Pressure:	40-50 PSI (276-345 kPa)
Flow Rate:	4 GPM (15.0 LPM) at 40 PSI (276 kPa)
Temperature:	43°-48°C (110°-118°F) For optimum cycle times, water temperature should be between 46°-48°C (115°-118°F).
Connection:	3/4-inch male hose connecton
Quality:	Potable / Tap water
Supply Line:	1/2" I.D. minimum / 3/4" I.D. optimum
Water Usage:	Approximately 13.3 gal. (50 L) per sterilization cycle.

B. An inlet water shut-off valve (reference Attachment A, Item 3) should be installed before the water pre-filter assembly. The valve should be located for easy access and visibility. The SYSTEM 1 Installation Kit (A1000) includes hoses and hose connectors to connect from the shut-off valve to the pre-filter assembly and pre-filter assembly to Processor.

C. Install the pre-filter assembly (reference Attachment A) allowing space for supply line connections and an additional 10 inch clearance from the bottom of the assembly to allow for filter changes. The pre-filter assembly includes a pressure regulator to reduce incoming water pressure to 50 psi. (345 kPa).



Pre-Filter Assembly
Part No. A1550

Water quality varies by location. Water supplies with large particulate matter will cause a shorter life span of your "A" pre-filter.

In order to decrease clogging and prevent short pre-filter life span, it may be necessary to install a 20 inch, 0.5 micron filter unit before the STERIS pre-filter assembly. This will remove larger water particles and allow the STERIS pre-filter assembly to do its job correctly.

NOTE: Two critical factors in both a successful installation and in running successful sterilization cycles are water inlet temperature and water inlet pressure.

Temperature:
FOR OPTIMUM CYCLE TIMES, WATER TEMPERATURE SHOULD BE BETWEEN 46°-48°C (115°-118°F).

Water Pressure:
REQUIRED HOT WATER PRESSURE IS 40 TO 50 PSI WITH A 4 GALLON PER MINUTE (GPM) MINIMUM RATE OF FLOW AT 40 PSI MAINTAINED.

Higher water pressure will be controlled by utilizing the water pressure regulator which is included on your pre-filter assembly.

SECTION 5 - WATER PRESSURE AND TEMPERATURE CHECK OUT

WATER PRESSURE CHECK OUT

START Install water shut-off valve on inlet water line ahead of pre-filter assembly.

CHECK Measure the inlet water pressure at the shut-off valve. The pressure must read greater than 40 psi. If water pressure meets this specification, proceed to WATER TEMPERATURE Check out.

LOW WATER PRESSURE A water pump with a pressurized tank is needed to boost the water pressure. Contact STERIS Field Service for recommendations on a pressure boost system.

HIGH WATER PRESSURE The STERIS pre-filter assembly included with your Processor will automatically regulate high water pressure to 50 psi.

WATER TEMPERATURE CHECK OUT

START Allow inlet water to run for three minutes to reach maximum temperature.

CHECK Measure the incoming water temperature after the pre-filter assembly. Temperature must be 43°-48°C (110°-118°F); 46°-48°C (115°-118°F) for optimum cycle times.

LOW WATER TEMPERATURE If the water temperature is below 43°C (110F°), install a 10-15 gal. fast recovery hot water heater. Supply hot water heater with hot water. Set water heater to 60° - 70°C. Run output of water heater into a quality anti-scald mixing valve. Note: water heater and mixing valve must be installed prior to the prefilter assembly. Call STERIS Field Service for recommendations.

HIGH WATER TEMPERATURE If the water temperature is above 48°C (118°F), a quality antiscald mixing valve must be installed before the prefilter assembly. Call STERIS Field Service for recommendations.

SECTION 6 - DRAIN REQUIREMENTS

A. To ensure proper drainage, the drain level must be lower than the counter top. The drain hose must slope downward and be free of kinks, loops, or hills.

B. The outlet of the drain hose must be above the drain water level or drain trap water level by six inches. The drain must be non-backpressuring, and if a connection is used, it must be non-restrictive. The preferred drain type is a 1-1/4 inch I.D. (minimum) standpipe.

Note: For multiple processor installations a larger drain may be required.

Upon completion of Processor installation and check out of water pressure, temperature and drain requirements, contact STERIS Field Service at 1-800-JIT-4-USE to schedule your installation check out.

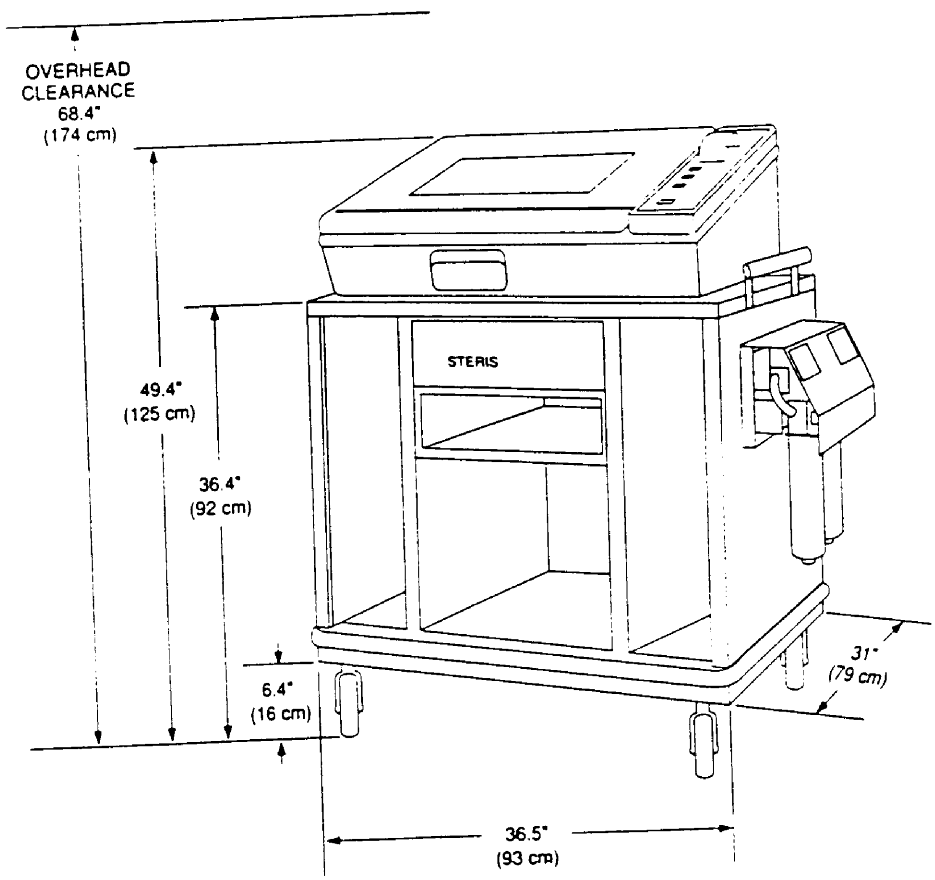
SECTION 7 - WORKSTATION CART

The SYSTEM 1 Workstation Cart is a customized cart designed to organize SYSTEM 1 accessories and supplies for easy access and use.

The water pre-filter assembly is mounted to the side of the Workstation Cart. The filter can be mounted on the left or right by exchanging with the Operator Manual bin to best align with plumbing. All plumbing and electrical connections are the same as a table top installation. (Reference Sections 3, 4, 5 & 6). An overall space 45.5 inches wide, 68.4 inches high and 31.0 inches deep is required for the Workstation Cart and Processor.

PHYSICAL SPECIFICATIONS (Nominal)

Width:	(Cart)	36.5 inches (93cm)
	(Cart, operator manual bin & pre-filter assembly)	45.5 inches (116cm)
Height:	(Cart)	36.4 inches (92cm)
Height:	(Cart & Processor)	49.4 inches (125cm)
Depth:	(Cart)	31.0 inches (79cm)
Weight:	(Cart & Processor)	
	Dry Weight	340 pounds (154kg)
	Operating Weight	375 pounds (170kg)



SECTION 8 - SITE SPECIFICATIONS

SPACE AND WEIGHT REQUIREMENTS

SYSTEM 1 Processor

Width:	38 inches (97cm) minimum
Height:	32 inches (81cm) minimum
Depth:	24 inches (61cm) minimum
Weight:	150 pounds (68kg)

Workstation Cart & Processor

Width:	45.5 inches (116cm) cart, operator manual bin and pre-filter assembly
Height:	68.4 inches (174cm)
Depth:	31.0 inches (79cm)
Weight:	375 pounds (170kg)

ELECTRICAL REQUIRMENTS

Voltage:	120VAC nominal (+5%,-10%)
Frequency:	60 Hz
Current:	15 amps
Service:	20 amp, 120 volt dedicated circuit terminated in 20 amp hospital grade GFCI double receptacle Note: Call STERIS Field Service for CSA Certified options.

WATER REQUIREMENTS

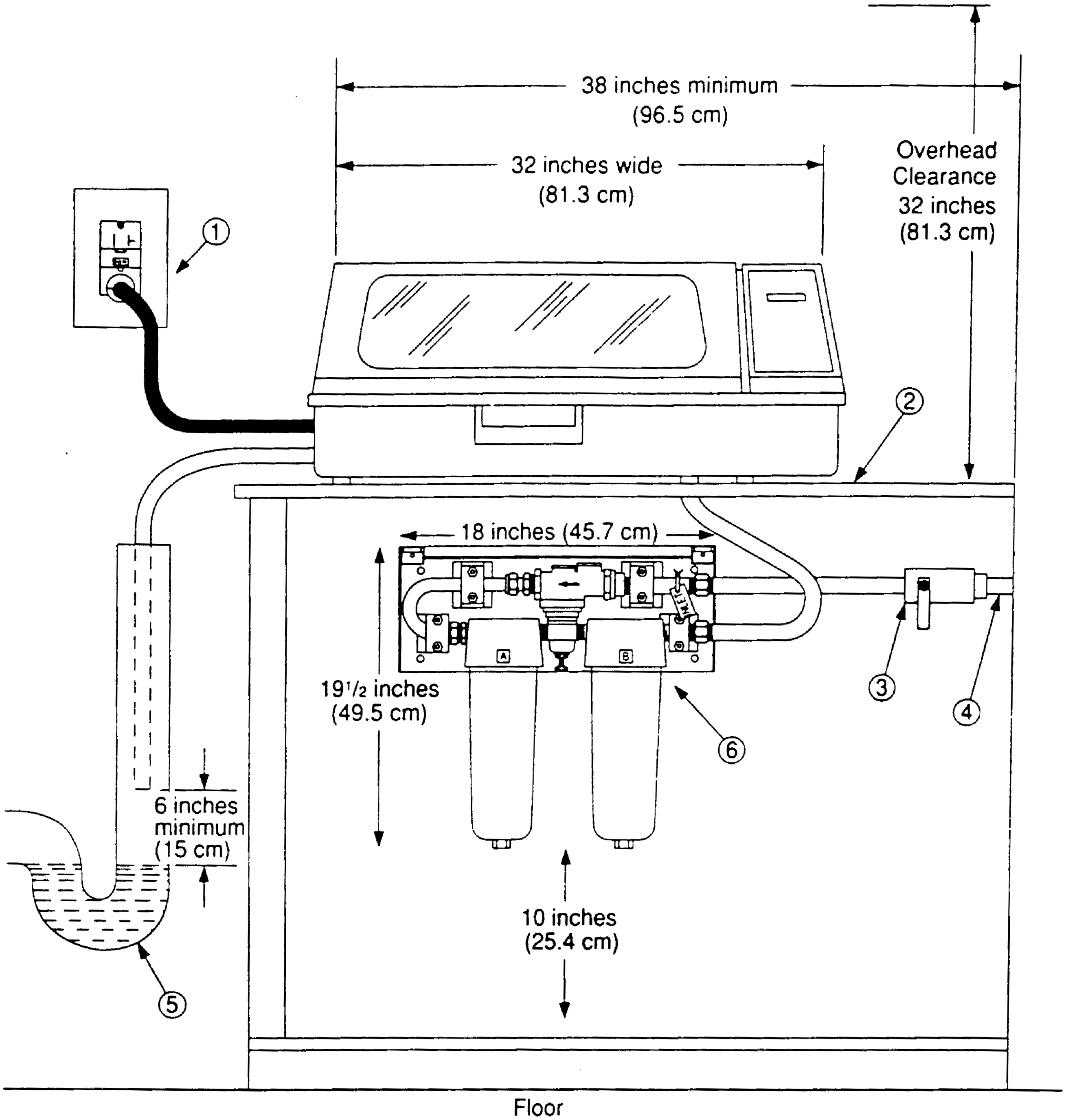
Pressure:	40-50 PSI (276-345 kPa)
Flow Rate:	4 GPM (15 LPM) at 40 PSI (276 kPa)
Temperature:	43°-48°C (110-118°F) For optimum cycle time water temperature should be between 46°-48°C (115°-118°F).
Connection:	3/4 inch male hose connector
Quality:	Potable / Tap water
Drain:	1 1/4 inch I.D. (minimum) nonbackpressuring
Supply Line:	1/2" I.D. minimum / 3/4" I.D. optimum
Water Usage:	Approximately 13.3 gal (50 L) per sterile processing cycle

ENVIRONMENTAL REQUIREMENTS

Room Temperature:	60-90°F (16-32°C)
Humidity:	10-90% relative. Non condensing

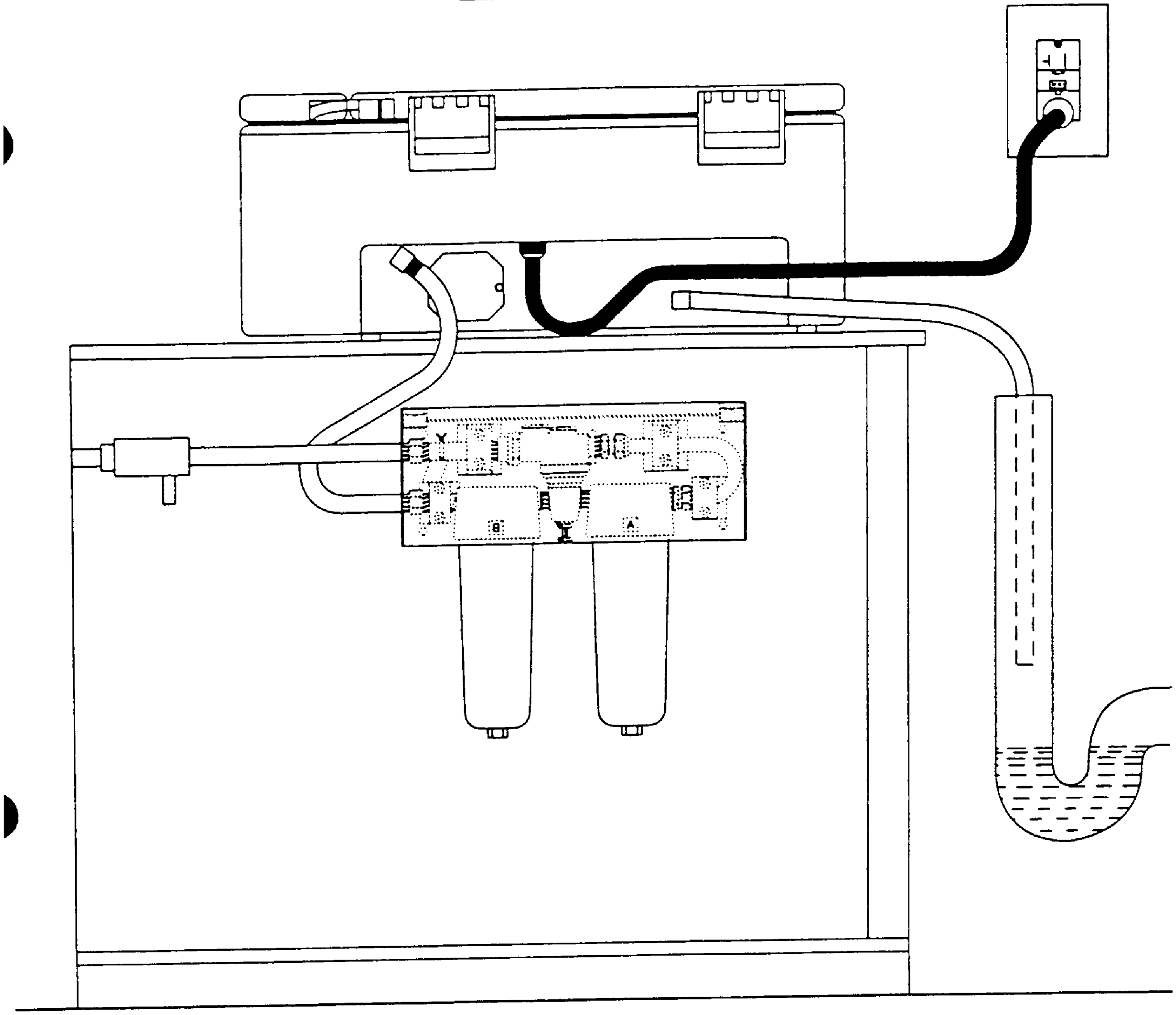
WARNING: RISK OF EXPLOSION IF USED IN THE PRESENCE OF FLAMMABLE ANESTHETICS.

Attachment A

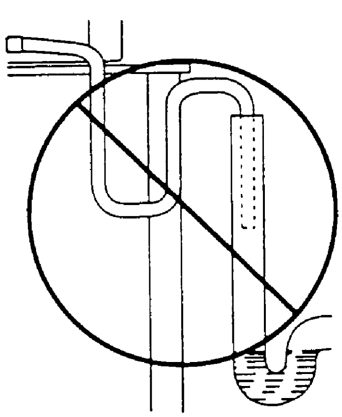


1. 20 amp 120VAC hospital grade GFCI protected duplex outlet receptacle
2. Hard surface cart or counter capable of safely supporting up to 200 pounds (90kg). Required depth is 24 inches (61cm)
3. Quick shut-off valve
4. Water inlet (1/2 inch i.d. minimum)
5. Standard sink drain or code approved non-backpressuring drain
6. Pre-filter assembly (supplied by STERIS)

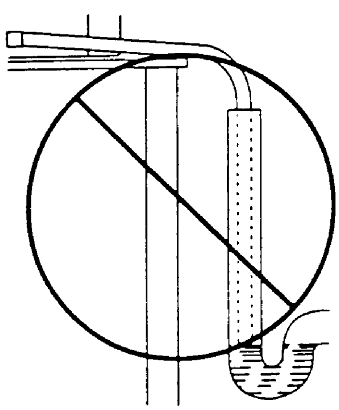
Attachment B



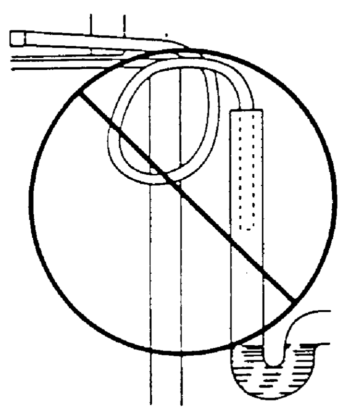
Unacceptable Drain Configurations



Drain hose forms a "U" trap restricting flow.



Drain hose is not 6 inches above drain water level.



Drain hose has a loop restricting flow.

NOTES:

NOTES:

STERIS

STERIS Corporation
5960 Heisley Road ■ Mentor, OH 44060 USA
216-354-2600
800-548-4873 (800-JIT-4-USE)

INSTALLATION CHECKOUT PROCEDURE

PURPOSE

This installation checkout procedure, when closely adhered to, will provide:

- Uniform procedures for all installations.
- Complete environment data for future technical assistance.
- Means to request customer assistance in environmental effects.
- Assurance that Processor is functioning at maximum level.
- Data to track start-up reliability.

GENERAL GUIDELINES

An Installation Report is to be completed every time an installation checkout is performed, a Processor has been moved to a new location, or major change has been made to the existing location.

NOTE: When installation checkouts are being performed on more than one Processor, a new Installation Report must be completed for each Processor.

Refer to the applicable sections for definitions and use of particular entries. If there is any confusion regarding these instructions or completion of the Installation Report, contact your supervisor for direction. Items marked with a (*) are not applicable to international installation reports.

DISTRIBUTION

There is only one copy to the Installation Report. The Installation Report should be attached to the corresponding Field Service Report and returned to STERIS Field Service.

PROCEDURE

The Installation Report form should be used to obtain all information about the customer and Processor at every installation checkout visit.

Complete the form in the following manner:

1. CUST. NO: Enter complete customer number.
2. CUST: Enter full name of customer facility.
3. MODEL NO: Enter model number of Processor (current model numbers are: 9ØA2 (12Ø VAC, 6Ø Hz) or 9ØA1 (22Ø-24Ø VAC, 5Ø Hz).
4. ADDRESS: Enter address of facility where Processor is located.
5. SERIAL NO: Enter serial number of Processor.

6. CITY & COUNTRY: Enter city of facility where Processor is located (include country).

7. STATE: Enter state abbreviation.

8. CYCLE NUMBER: Enter cycle number of Processor at time of arrival.

9. CONTACT: Enter name of primary person responsible for Processor maintenance at facility.

1Ø. DEPARTMENT: Enter department where Processor is located.

11. FSR NO: The number of the Field Service Report to which this form will be attached.

12. PHONE: Enter phone number of contact person.

13. EXT: Enter phone extension of contact person (if applicable).

14. DATE: The date of the installation check out.

15. FACILITIES: Name of facilities person with which installation was reviewed.

16. LOCATION INFO*: Provide specific information needed to locate Processor (i.e. building, floor, and room number).

17. ACCESS CONSIDERATIONS*: Indicate situations where service access to Processor may be limited (i.e., when located in an O.R. or procedure room).

18. OPERATOR TRAINING*: Name of person attending Operator Training at STERIS and dates.

SITE ASSESSMENT

If the Processor's environment does not conform to the site requirements (as specified by STERIS), the appropriate hospital personnel should be notified verbally and in writing using the Site Evaluation Report. (Note any unusual conditions in the comments section at the bottom of the Installation Report). Include a copy of all written notification with the Installation Report form when returning your paperwork to STERIS.

SUPPORTING SURFACE

Determine the integrity and capacity of the supporting structure for the SYSTEM 1 Processor.

CLEARANCE

Verify adequate clearances around the Processor. Note any unusual clearance problems such as a hot surface or other situation that might make operation or service of the Processor more difficult than normal, or require special tools or personnel to access and service the Processor.

ELECTRICAL UTILITIES

19. GFI OUTLET, GFI BREAKER OR ISOLATED POWER: Check if the electrical outlet is a standard GROUND FAULT INTERRUPTED outlet, is protected by GFI breaker, or if ISOLATED POWER type.

2Ø. VERIFIED TRIP: Check if GFI (or LIM) had been observed to trip by using a test button or GFI tester.

21. DUAL/SINGLE RECEPTACLE: Circle one that applies.

22. NEMA 5-2ØR/ OTHER*: Circle if NEMA series 5, 2Ø AMP, receptacle is provided and is of hospital grade. Describe any other conditions (for 9ØA2 only).

23. DEDICATED LINE/OTHER: Circle if the electrical outlet is on a dedicated electrical circuit and rated for 2Ø amps (9ØA2) and 1Ø amps (9ØA1). Describe any other conditions.

24. COMMENTS: Note any unusual conditions or additional useful information.

WATER INLET

25. DUAL/SINGLE PREFILTER*: Circle that which applies.

26. ADDITIONAL PREFILTERS*: Indicate the type (preferably in micron rating) and location any of additional prefilters installed.

27. TIME VS. TEMPERATURE: Measure and chart the water temperature at a sampling of intervals to show at what rate the temperature rises and becomes stable. This should be done without the prefilter elements in place, using your hand terminal to open the pump solenoid valve. Monitor water flow for at least 5 minutes. This should be done before water has been permitted to run through the system.

28. AVAIL PRESS*: Static available water pressure (in psi), with no water flowing, at the inlet to the Processor.

29. INLET PRESS*: Water pressure (in psi), while filling, at the inlet to the Processor.

FILL TIMES

By measuring the first and last fill times, factoring in the number of fills between the two and interpreting the FP readings, between 29 and 3Ø, you will get an indication of water pressure, supply line capacity, and (at least on a short term basis) water quality.

3Ø. FIRST FILL TIME: Time (in seconds) of the first fill.

31. <u>LAST FILL TIME:</u> Time of last fill. If a sterilization cycle is the last cycle to be run, the fourth rinse fill time.

32. <u>NUMBER OF FILLS:</u> Total number of fills from first to last. A DIAGNOSTICS cycle has one fill. A complete sterilization cycle has 5 fills.

33. <u>TEMPERATURE CONTROL</u>: Circle "NONE" if no mixing valve is present. Circle "MIXING VALVE" if present and describe (i.e. manufacturer, model, type, temperature range, etc.).

34. <u>TEMPERATURE BOOST</u> Circle "NONE" if no means of boosting water temperature is present, or circle "OTHER" and describe (i.e. tank type water heater, on-demand in-line heater, etc. to include capacity, wattage, manufacturer, model, etc.).

35. <u>WATER FLUSH</u>: Circle "NONE" if no means of running water to pre-heat is available, or circle "OTHER" and describe means (i.e. sink faucet, bypass line, etc.).

36. <u>GAUGES</u>: Circle "NONE" if not present, or "OTHER" and give ranges (i.e. Ø-5Ø°C, Ø-1ØØ PSI, 4Ø-2ØØ°F).

37. <u>COMMENTS</u>: Note any unusual conditions or additional useful information, particularly the following items:

- severe water pressure variations
- additional pressure regulators
- water temperature variations throughout the day
- unusual water quality problems
- construction and remodeling activities, which could affect water quality
- undersize supply lines (1/2" I.D. minimum)

DRAIN

38. DISTANCE TO STANDING WATER: Record in inches, the distance from end of drain hose (or drain fitting) to standing water.

39. DEDICATED/ SHARED: Circle the appropriate choice. If drain is shared, describe how.

4Ø. COMMENTS: Note any unusual conditions, potential problems or additional information.

VERIFICATION

In most installations, at least one (1) diagnostics and two (2) consecutive sterilization cycles should be run. If the customer has already run cycles, verification should include at least one (1) diagnostics and one (1) sterilization cycle.

41. TRAYS TESTED: Indicate trays tested.

42. DIAGNOSTICS CYCLES: Indicate cycle count, start time, readings of stored variables and who ran the cycle.

43. FZ VALUE: Enter the value of the variable FZ (in counts).

44. FP VALUE: Enter the value of the variable FP (in counts).

45. CP VALUE: Enter the value of the variable CP (in counts).

46. CZ VALUE: Enter the value of the variable CZ (in counts).

47. PS VALUE: Enter the variable of the variable PS (in counts).

48. FF VALUE: Enter the value of the variable FF (in counts).

49. HP VALUE: Enter the value of the variable HP (in counts).

50. HPC VALUE: Enter the value of the variable HPC (in counts).

51. HPF VALUE: Enter the value of the variable HPF (in counts).

52. BY: Enter "F" for DIAGNOSTICS run by the Field Service Representative, or "C" for DIAGNOSTICS run by the customer.

53. STERILIZATION CYCLE COUNT: Enter the cycle count for the Sterilization cycle being recorded.

54. TEMPERATURE: Enter the temperature range from the printout.

55. CONCENTRATION: Enter the concentration reading from the printout.

56. EXPOSURE: Enter the exposure time from the printout.

57. CYCLE TIME: Enter the total cycle time, computed from the information on the printout.

58. FT: Enter the fill time from the printout.

59. IT: Enter the inlet temperature from the printout.

6Ø. BY: Enter "F" for a Sterilization cycle run by the Field Service Representative, or "C" for Sterilization cycle run by the customer.

61. SITE EVALUATION REPORT GENERATED: Check if a Site Evaluation Report was generated to address any site problems which require correction.

62. COMMENTS: Note any unusual conditions, potential problems, or additional information that may affect the reliability, serviceability or overall customer concerning this installation.

63. COMPLETED BY: Print your name.

64. SIGNED: Sign your name.

65. DATE: Date checkout was completed.

66. OUT-OF-BOX PERFORMANCE: Indicate appropriate choice: Do not consider mandatory upgrades or site related problems.

SERVICE NOT REQUIRED - No Processor related problems were found.

SERVICE REQUIRED - A problem was found with Processor that could NOT have been resolvable by the user.

- INSTALLATION COMPLETE -

Before the shipment or the return of any STERIS SYSTEM 1 Processor, or other materials to the STERIS Corporation; a Returned Goods Authorization (RGA) number MUST be obtained. The RGA number can be obtained by calling the Field Service Department at STERIS Corporation 216-354-26ØØ.

SHIPPING PRECAUTIONS

1. Before shipping the STERIS SYSTEM 1 Processor, certain precautions should be followed to avoid:

   a. The possibility of fluids freezing during transport

   b. The possibility of physical damage

   c. The loss of data

   d. The loss of components

   The precautions below are intended for use by all STERIS associates and representatives, including those trained in the service of the SYSTEM 1 Processor.

CAUTION

To avoid damage to the SYSTEM 1 Processors and sensitive filters, valves, and electronics, exposure to extreme temperature excursion should be minimized.

DRAINING THE PROCESSOR PRIOR TO SHIPMENT

All possible water should be drained from the SYSTEM 1 Processor prior to boxing for shipment. The following procedure is meant to aid in the process:

1. Unplug the STERIS SYSTEM 1 Processor.

2. Remove all hoses from the inlet and the drain to allow draining pressures to be equalized.

3. Remove any adapter trays and containers from inside the chamber of the SYSTEM 1 Processor.

4. Remove the Sterile Filter by unscrewing the Sterile Filter Housing Cap from the Sterile Filter Housing Body and lifting out the filter.

5. Suction out all possible water from inside the Sterile Filter Housing Body, including any water inside the stand-pipe located in the center of the body opening.

6. Suction out all possible water from inside the three (3) connecting water probes located inside the SYSTEM 1 Processor adapter chamber (drip pan). CAUTION: Do not place hard or rigid suctioning devices into the probes. Damage to thermocouples or conductivity probes could occur.

7. Repeat steps 5 and 6 until visible water is gone.

8. Place a towel or other water catching device under the rear of the SYSTEM 1 Processor. Replace the Sterile Filter Housing Cap onto the Sterile Filter Housing Body. Tip the Processor onto its left side to allow water to flow out of drain port on rear of the Processor. Return Processor to level position once water has stopped flowing.

9. Tip the Processor backwards to allow any other trapped water to flow out of the drain and inlet ports on the rear of the Processor.

1Ø. Dry all visible surfaces, and inside the drip pan and Sterile Filter Housing Body.

11. Cap (if caps are available) the three (3) probes in the Processor chamber.

12. Remove the Sterile Filter Cap from the Sterile Filter Housing Body and insert crumpled paper towels into the opening of the Sterile Filter Housing Body and replace the Cap.

13. Close or cover all other possible openings, including:

    the electronics enclosure
    the drain port on the rear of the Processor
    the inlet port on the rear of the Processor
    the membrane switch panel
    the lid (without the sterilization adapter in place)

- DRAINING PROCEDURE COMPLETE -

BOXING PROCEDURE

After the STERIS SYSTEM 1 Processor has been drained of water, it can be boxed. The boxing procedure should be followed to avoid:

a. Damage during shipment
b. Improper handling by shippers
c. Unsafe transit of any problematic conditions or data.

NOTE: If the original shipping container and parts have been discarded, contact STERIS for delivery of approved boxes and shipping hardware. STERIS will provide, any packaging materials required to assure safe transport of the SYSTEM 1 Processor and accessories returning to STERIS.

1. Insert the STERIS SYSTEM 1 Processor into the styrofoam end caps (2 provided).

2. Lift the SYSTEM 1 Processor with end caps into the lower shipping box. The Processor will drop into the box, feet first, with the electrical line cord coiled up in the center of the back of the Processor. Two people should perform this task in order to reduce the possibility of injury.

3. Insert any printed materials or data that will accompany the Processor, in the front of the box between the end caps.

4. Place the top half of the box over the lower half of the box and fasten together with shipping straps.

NOTE: This shipping box does not need to be strapped to a shipping skid, unless required by a specific freight carrier.

- BOXING PROCEDURE COMPLETE -

STERIS SYSTEM 1™ PROCESSOR SPECIFICATIONS

PHYSICAL CHARACTERISTICS

Width:	32 in. (81 cm.)	
Depth:	24 in. (61 cm.)	
Height:	13 in. (33 cm.)	Lid Closed
Weight:	115 lbs. (52 kg.)	Dry
16Ø lbs. (72 kg.)	Shipping	

<u>SYSTEM OPERATION</u>

INDEX

<u>MODELS 9ØA1/9ØB1</u>

STERILE PROCESSING CYCLE

FIRMWARE
P/N 3ØØØ91
REV A

THEORY OF OPERATION

Event #	Component(s)	Action	Results
1. Start Button Pushed.	LS4	Output checked.	Cycle starts if LS4 output is < .8 Volt.
2. Cycle Started.	COMP-1 LS-5 SSR3 SSR5 SOL1 [CK5],[CK7],[CK6] [S] {Seal}	Enabled. Controls COMP-1. Connects to VAC Neutral when LS-5 [psi] closed. Connects to 24 VAC common when LS-5 closed. Energized when LS-5 closed. Air flows through pressured to 4Ø psi.	LS-5 maintains system pressure at 4Ø±3 psi with a difference of 5±1 psi. Seal inflates through CK7. Printout of header begins.
3. System Pressurized.	SOL1 [CK5] LS-5	De-energized. Closed. Shuts off COMP-1 if pressure is reached.	Air is vented from the compressor head and [CK5] holds pressure in the manifold. Processor delays for 1Ø seconds after enabling A/C in Event #2 to allow system to pressurize.
4. After the 1Ø Second Delay.	SOL4 SOL5	Enabled by CN3 pins 4, 6 going to 24 VAC common.	
5. Triggered by Event 4.	SOL4 [V5] SOL5 SOL7 HTR1 H.P.PUMP (P2)	All listed components are now under control of LS2.	Water flows only if seal [S] is inflated and air press. is enough to control the process. If system air pressure is <26 psi, LS2 [PS2] opens and removes 24 VAC from listed parts,preventing chamber fill.
6. Successful completion of Events 1 through 5.	SOL4 (V5)	Energized.	Air flows through SOL4 to [V5]. This air inflates the valve diaphragm and pinches off the drain flow path {V5 closed}.
7. Event 5 completed.	SOL5 TC3	Energized (open). Monitors temp.	Water flows through inlet to drain until water is up to temperature or 2 minutes expire.
8. Thermocouple [TC3] Detects temp. >42°C **or** 2 minutes elapse.	SOL5 SOL7 SOL4 SOL8	De-energized. Energized. Energized. Guides air to drain.	Water flows from inlet through SOL7, [CK4], [FLT1] starting to fill processor plumbing and chamber. During this time, any air trapped in [FLT1] flows through SOL8, the [.Ø3Ø] orifice, and [CK8] to drain.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
9. 5 sec. after completion of Event 8.	SOL3 SOL4 SOL7	Energized. Still energized. Still energized.	Air flows through SOL3 to air controlled valve [V6]. This air inflates the valve diaphragm which pinches off the flow backwards through [P1] directing all flow through the adapter spray nozzles.
1Ø. 3Ø seconds after start of fill.	SOL3 SOL7 SOL4	De-energized. Still energized. Still energized.	Air in valve [V6] exhausts through SOL3. [V6] diaphragm deflates, opening the flow path to the pump [P1] outlet.
11. Successful completion of Event 1Ø.	[CK2] [CK3] LS3	Flowing. Flowing. Closed.	Fill continues with air and water being exhausted from the top of [FLT1] and air exiting through CK2 and CK3 to the drain.
12. Chamber Filled	LS3 SOL7 [CK2], [CK3]	Open. Disabled by Controller Board. Still flowing.	Inlet water flow stops. Excess water overflows through [CK2], [CK3] until chamber pressure drops to < 6" of water.
13. 1Ø seconds after LS3 [FL1] opens.	SOL4 [V5]	De-energized. Vents air through SOL4.	Fluid flows through pump [P1] and valve [V5] to the drain.
14. 1 sec pause after completion of event 13.	SOL4 P1	Energized. Energized.	Air flows from air manifold through SOL4 to air operated valve [V5] inflating its diaphragm, stopping the flow to the drain. P1 starts pumping and fluid is circulated through the system.
15. 3Ø Seconds after [P1] starts.	TC1 HEAT-1	Monitors temp. Enabled.	Heats water at about 1°C per minute.
16. TC1 [TC1] detects fluid temp of > 5Ø°C.	HTR-1 P1	Disabled. De-energized.	Bubbles Rise.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
17. 6 sec. pause after event 16.	SOL7	Energized 6 sec. ********************** NOTE: Inlet temperature Specification must remain at 43-48°C for unit to function properly. If inlet temp. falls beyond limits, many permutations of errors may occur. **********************	Water flows through SOL7, [CK4], [FLT1], and into the processor chamber to void any accumulated air through [FLT1], [CK2], and [CK3] to drain. Some inlet water also flows to drain through De-energized SOL8, [CK8], and the [Ø.3Ø] orifice.
18. 6 sec. refill completed.	SOL7	De-energized if chamber full sensed by LS3. If not full, 8 more sec. allowed for fill.	Water inlet flow is stopped.
19. 2Ø sec. after temp reaches > 5Ø°C.	P1 P2 [CK9] in P2	Energized. Energized. Relieves any pressure in excess of 18 psi.	Fluid circulated through the processor chamber and through the HP system.
2Ø. 45 seconds after temp reaches > 5Ø°C.	HTR-1 TC1	Re-enabled. Monitors temp.	Heating continues until temp. of >51.5°C is detected by TC1.
21. Chamber temp passes 51.5°C **and** 4Ø seconds elapse since reaching temp > 5Ø°C.	CP1, CP2 [CT1] LS3 TC1 HTR-1	Monitor chem. conc. Open, monitoring fluid level. Monitors temp., heater enabled as needed to keep temp > 53°C and < 55°C. Cycles on/off as necessary.	12 min. software timer starts. System continues in this mode for 12 min. as long as: conc. is correct, LS3 remains open, and temperature stays between 5Ø°C and 6Ø°C. Maintenance of proper chamber fluid temp.
** Events 22-22b are constantly occurring as necessary to maintain chamber temperature. **			
22. Fluid Temp. falls below 53°C.	TC1	Senses temperature.	Controller Board sets CN3 pin 1 to Ø VDC, activating SSR1.
22a. CN3 pin 1 connects to VAC neutral.	SSR1	Energized.	Line voltage applied across heater element HEAT-1 until TC2 thermocouple detects temp of >55°C.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
22b. Fluid temp. reaches > 55°C at TC2.	SSR1	De-energized.	Removes line voltage from HEAT-1. This function is performed continuously by the processor whenever the heater is required.
23. 12 min. cycle from event 22 ends.	HEAT-1 P1 P2 SOL4 SOL3 CK1	Disabled. Energized. Energized. De-energized. Energized. Draws air through FLT2.	Processor drains for 4Ø seconds. De-energized SOL4 vents air from V5 opening a path to the drain. Energized SOL3 closes V6 pinching off the path to the chamber.
24. Event #23 ends. (4Ø sec. from the beginning of Event #23)	P1 SOL4 SOL3 SOL7	De-energized. Energized. De-energized. Energized. *********************** **Rinse Mode:** Chamber is filled with fresh water, circulated for 1Ø seconds, then drained for 4Ø seconds. This mode repeats 4 times. Steps 24 thru 29 describes **1** of the **4** rinse cycles. ***********************	Rinse mode starts. Air is vented from air-operated valve [V6] through SOL3 opening the internal fluid flow path. Air pressure is applied to air-operated valve [V5] through SOL4 closing the system outlet to drain. Water flows through SOL7, [CK4], [FLT1] filling the process chamber. Some water flows through SOL8, [CK8], and the [.Ø3Ø] orifice to drain. This continues for 5 seconds.
25. 5 seconds condition from event 24 ends. **(STILL in RINSE MODE)**	SOL 3 LS3	Energized. Monitors chamber level.	Air flows through the energized SOL3 to air operated valve [V6] causing it to shut. Inlet water flow is diverted to the spray nozzles on the adapter plate. This continues until LS3 opens, sensing that the chamber is full.
26. Chamber is full. **(Still in RINSE MODE)**	LS3 SOL7 SOL4 SOL3	Open (as a result of chamber full). De-energized. De-energized. De-energized.	Air-operated valves [V5], [V6], vent air through SOL4, SOL3 respectively, opening them.
27. Result from Event 26.	P1	Flows water.	Pump inlet flooded for 1 second.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
28. 1 second flow from Event 27 ends.	SOL4 P1	Energized. Energized.	Air flows through air operated valve [V5] closing the drain outlet and starting P1 which circulates fluid through the system. This continues for 1Ø seconds.
29. 1Ø second condition from Event 28 ends. **(Still in RINSE MODE)**	SOL3 SOL4 P1	Energized. De-energized. Still energized.	Air vents from air operated [V5] through SOL4 opening the flow path to drain. Air flows through SOL3 causing air operated [V6] to close. This directs all fluid flow from P1 to drain. This continues for 4Ø seconds. This completes one rinse cycle.
29b. 1Ø second condition from Event 28 ends, and the 4th rinse cycle.	P2 LS6	De-energized. Monitors for open switch condition (no pressure).	Verify pressure switch LS6 operation. Otherwise cancels.
29c. LS6 open and 4th rinse cycle.	P2 LS6 SOL4	Energized. Monitored for switch closed condition (positive pressure). Energized.	Verify H.P. Pump and pressure switch normal operation. Otherwise cancels.
*29d. LS6 closed and 4th rinse cycle.	SOL4	De-energized.	Continue drain mode.

Event #	Component(s)	Action	Results
3Ø. 4 Rinse cycles are completed.	P1 SOL4 P2 SOL3	Disabled. Energized. Still energized. Still energized.	Air flows through SOL4 causing air- operated [V5] to close the drain outlet. Air operated [V6] remains closed. P2 runs to clear water from high pressure part of system and transitions from pumping fluid to pumping air.
31. 6Ø seconds from Event 3Ø.	P2 SOL4 SOL3 SOL4	Disabled. Still energized. De-energized. De-energized (after complete light illuminates).	Machine waits for the CANCEL button to be pressed. Processor illuminates the complete light on the control panel. Air flows from air-operated valves [V5] and [V6] through SOL4 and SOL3 opening both the drain and flow path in the Processor. Preliminary process summary begins printing. There are 6 audible tones.
32. Operator presses the CANCEL button.	SOL2 COMP-1	Energized. Disabled.	Air flows from seal [S] through open valve SOL2. Chamber open time is printed and paper is advanced. Seal [s] deflates and the chamber latch can now be opened. Chamber open time is printed and paper is advanced.
33. Event #32 ends (15 seconds after printing ends).	SOL2	De-energized.	Processor now completes the printout and returns the machine to the ready condition. SOL 2 turns off and the machine is quiescent.

4.1.2 STERILE PROCESSING CYCLE DESCRIPTION

SYSTEM 1 exposure parameters of temperature, sterilant concentration, and exposure time are established, maintained, and/or monitored by the Processor. In addition, a number of other machine conditions are monitored during the cycle to assure user safety. Failure to achieve or maintain required conditions results in automatic cancellation of the cycle.

Cycle cancellation may also be manually selected, which then follows the same automatic sequence.

A sterile processing cycle is initiated by depressing the Start button with the Ready light lit, and proceeds if the lid is detected closed. Lid closure is monitored throughout the cycle. The air compressor is enabled and is controlled by a pressure switch in the air manifold pressurizing the inflatable seal which locks the lid closed and seals the processing chamber. The switch (LS5), maintains the air manifold at 35-4Ø PSI, turning the compressor on and off as necessary. All solenoid operated valves are powered through a second pressure safety switch (LS2) which closes when minimum seal pressure is satisfied. The water dump valve and drain pinch valve are enabled at this point in the cycle, they are energized only after minimum system pressure. If minimum system pressure is not maintained, power is removed from the solenoid valves that control the pinch valves and the chamber drains causing the cycle to cancel.

After minimum safety pressure is achieved, water is dumped directly to drain to flush any cool water from the inlet lines. When minimum water temperature is attained, as read by a thermocouple (TC3) in the machine drain, or after two minutes of the dump valve being enabled, the dump valve is closed and the inlet valve is enabled/energized-open. The air compressor continues to run until maximum system operating pressure is reached and opens the first pressure switch (LS5). The compressor then cycles on whenever system pressure drops and this switch closes.

Water enters the sterile filter housing through an inlet check valve (CK4), is filtered to the inside of the filter, and passes through the housing into the system plumbing through both a low port and a standpipe on the inside of the filter. A bleed-to-drain passage on the inlet side of the filter allows otherwise trapped air to be vented to drain during fills.

4.1.2 STERILE PROCESSING CYCLE DESCRIPTION (continued)

Water enters the chamber through the plumbing and quick-disconnects while the circulation pinch valve is cycled to vary the fill path. As the chamber is filled, air is exhausted through a vent at the top of the chamber, through the float block assembly check valve (CK2 & CK3) and through the machine drain. Chamber filling is terminated by de-energizing the inlet valve when the float switch (LS3) opens. A small amount of excess water then exhausts to drain through CK2 and CK3 for a brief period.

The drain pinch valve is pulsed open to rush water through the circulation pump to purge trapped air. The pump then circulates water through the sterilant package to mix the powders and draw the liquid portion into solution, past the energized heater, and back into the exposure chamber. Thermocouples monitor inlet and outlet temperatures of solution from the heater. When exposure temperature is attained, the pump is stopped momentarily to allow air to rise, and then the inlet valve opens to refill the chamber and exhaust major air. The system and high-pressure pumps are turned on and solution is heated again to exposure temperature.

At the initiation of and throughout the timed sterile processing cycle, the sterilant concentration is monitored by conductivity probes, sterilant level is monitored by the float switch, and sterilant temperature is monitored by thermocouples to assure that parameters are met. Sterilant is pumped through the system plumbing, into the chamber, circulated through the inside of the sterile filter through the housing's bottom port and out the standpipe. Sterilant is also made available at increased pressures by a second pump through quick-disconnect attachments in the chamber.

After exposure completion, the circulation valve closes, drain valve opens, and solution is pumped to drain for a fixed time. Air back fills the chamber through the sterile air filter and CK1 at the float block assembly and closes the float switch. The high-pressure pump continues to run throughout the balance of the entire cycle, except for a small time interval during which the system verifies the high pressure pump operation.

The chamber and contents are rinsed in 4 consecutive cycles of filling the chamber as originally, priming and briefly circulating, then pumping to drain. At the fourth rinse cycle, when dumping to drain, the H.P. Pump is tested in the same manner that it is tested during test #14 of the DIAGNOSTIC cycle (refer to section 4.2). Following actuated exhaust of the inflatable seal, the cycle is complete.

READING STERIS SYSTEM 1 NORMAL PRINTOUTS FOR TEMPERATURE RANGE

The STERIS SYSTEM 1 prints out 2 temperature numbers in the following format:

TEMP: XX.X-XX.X °C

[#1] [#2]

During the pre-exposure phase (prior to reaching 51.5°C chamber temperature):

Temperature #1 = minimum of TC1 and TC2

Temperature #2 = maximum of TC1 and TC2

During the 12 minute exposure phase (exposure time > Ø.Ø):

Temperature #1 = lowest reading at heater inlet (TC #1)

Temperature #2 = highest reading at heater outlet (TC #2)

During the rinse phase:

Temperature #1 and temperature #2 - do not update from last values at the end of 12 minute time.

STERILE PROCESSING CYCLE CANCELLATION DESCRIPTION

"OPERATOR CANCELED"	Cycle Terminated by Operator.
"FILL PROBLEM"	Fill time >5 minutes or <25 seconds.
"HEAT PROBLEM"	Temperature did not reach 5Ø°C during allowed time. Time = 3 x TW in seconds. TW = (5Ø - 1st 15 seconds of input water = avg. temp) x 6Ø. If TW <12Ø then TW = 12°C.
"TEMPERATURE UNDER 5Ø°C "	Temperature <5Ø°C during 12 minutes of exposure time.
"CONCENTRATION LOW"	Concentration <175 during 12 minutes of exposure time.
"CHAMBER LEVEL LOW"	Loss of fluid during 12 minutes of exposure time.
"HEATER PROBLEM"	Delta T of 7°C across 2 chamber temperature sensors. (TC #1 - TC #2 > 7°C).
"CHAMBER OPEN"	Latch open detected.
"TEMPERATURE OVER 6Ø°C"	Temperature >6Ø°C detected in chamber.
"TEMP. PROBLEM"	Internal temperature Sensor <13°C or >5Ø°C on PCBd.
"POWER FAILURE"	Loss of input power during a cycle. Non-recoverable and all internal data is lost.
"H.P. PUMP FAILURE"	High pressure pump has failed, or functions but does not produce sufficient flow for system detection.

MODELS 9ØA1/9ØA2

DIAGNOSTIC CYCLE

FIRMWARE
P/N 3ØØØ91
REV A

THEORY OF OPERATION

Event #	Component(s)	Action	Results
1. DIAGNOSTICS button is pressed.	LS4	Output checked.	DIAGNOSTICS starts if lid is closed. (LS4 output <.8V)
2. DIAGNOSTIC Cycle started.	LS5 Seal [S]	Controls compressor inflated.	"DIAGNOSTIC" Lamp is lit. Printer prints header.
3. Printing of Header is complete.	Processor		Begins Testing Sequence.
4. Test #1: A/D Converter.	A/D converter	Processor checks ground and +5V DC against limits.	Continues if values are correct. Cancels and prints message if values are incorrect.
5. Test #2: Inlet Temperature.	SOL4 SOL5	Energized. Energized.	Drain pinch valve is closed. Dump valve is opened. Water flows.
5a. 2Ø-18Ø second monitoring period.	TC3	Monitors inlet temperature.	Continues if the proper temperature is met within the time period. Cancels and prints message if the proper temperature is not met within the time period.
6. Test #3: Fill time.	SOL4 SOL7 SOL5	Still energized. Energized. De-energized.	Water flows through filter FLT1 (also down drain) and fills chamber.
6a. First 2Ø seconds of fill.	PT1		Pressure Transducer is monitored. Value is stored in processor memory as fill pressure [FP].
6b. Within 18Ø seconds from start of fill.	SOL7	De-energized LS3 is detected open within the time period.	Continues if LS3 is detected open. Inlet valve is closed. Cancels and prints message if the chamber does not fill within 18Ø seconds.
7. Test #4: Pressure Transducer.	SOL4 P1 Processor [PT1]	Disabled for 1 second, then re-energized. Started for 4 seconds, then turned off. Waits 25 seconds, reads pressure for 6Ø seconds.	Stores pressure [FZ] Chamber pressure should be at zero.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
7a. 12Ø seconds after start of test #4.	Processor	Compares Pressure Transducer zero output and the fill pressure recorded during test #3 against limits.	Continues if pressure values fall within limits. Cancels and prints message if pressure values do not fall within limits.
8. Test #5: Circulation Pressure.	PUMP1	Started and run for 3Ø seconds.	N/A
8a. 3Ø seconds after PUMP1 starts.	Pressure Transducer	Monitored for 6Ø seconds.	Stores Circulation Pressure [CP].
8b. Event 8a completed.	Processor	Compares pressure readings from Event 8a against limits.	Continues if values fall within limits. Cancels and prints message if values do not fall within limits.
9. Test #6: Thermocouples #1, and #2.	TC1 TC2	Output of thermocouples is compared.	Continues if TC1 and TC2 read within 3°C or 6 counts of each other. Cancels and prints message if they do not.
1Ø. Test #7: Circulation Valve.	SOL3	Energized.	Closes circulation pinch valve.
1Øa. 1Ø second pause.	PROCESSOR [PT1]	Reads Pressure Transducer. Stores circulation zero [CZ].	Continues if system pressure has fallen by 1 psi minimum. Cancels and prints message otherwise.
11. Test #8: Heat Rate.	SOL3	Disabled.	Opens circulation pinch valve.
11a. 5 second pause for chamber fluid level to stabilize.	Processor	Monitors output of LS3 for chamber full.	Goes to Event 11c, continues test if chamber is full. Goes to Event 11b if chamber not full.
11b. Chamber not filled in Event 11a.	PUMP1 SOL7	Disabled. Energized.	Opens the water inlet valve SOL7, until the float switch opens again.
11c. Chamber filled in Event 11a or 11b.	HEAT1 SOL7 PUMP1	Energized. De-energized. Enabled.	N/A

THEORY OF OPERATION

Event #	Component(s)	Action	Results
11d. 3Ø seconds of heating.	TC1	Reads temperature after 3Ø seconds.	Temperature stored in Processor memory.
11e. 6Ø seconds additional of heating	TC1	Monitors temp. Reading stored from Event lid compared against temp.	Continues if the readings increase by at least 1°C. Repeats the test up to 3 times if an increase of 1°C or more does not occur.
11f. 3 repeats of Event 11 through 11e.			Cancels and prints message if temperature increase of at least 1°C is not detected.
12. Test #9: Drain Valve	LS3	Monitored for open condition.	Continues if the switch is open. Cancels and prints message if the switch is not open. LS3 being closed means that fluid has been lost from the chamber during Event 11-11f.
13. Test #1Ø: Drain Time	SOL4 SOL3	De-energized. Energized.	Fluid is forced down the drain by the Circulation Pump.
13a. Drain time is monitored by the Processor.	LS3	Monitored for closed condition. The time taken for LS3 to close is compared against 5 second limit.	Continues if LS3 closes in 5 seconds or less. Cancels and prints message if LS3 does not close in 5 seconds.
13b. Monitor H.P. Pump pressure switch. Begin Test #14.	LS6	Monitors for open (no pressure) switch condition.	Continues if open condition is observed within 1Ø seconds. Otherwise cancels.
13c. H.P. Pump Monitor test.	SOL4 PUMP2 LS6	Energized. Enabled Monitor for closed condition (positive pressure).	Continues if switch closed condition is observed within 2Ø seconds. Otherwise, cancels.
13d.	SOL4	De-energized.	Continues drain mode.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
14. Test #11: Conc. Monitor	SOL4 SOL3	Still de-energized. Still energized.	Machine continues to drain.
14a. 4Ø seconds of draining elapse.	SOL3 PUMP1 PUMP2	De-energized. Disabled. Disabled.	Stops draining of unit.
14b. Event 14a.	Processor	Reads output of Conc. Monitor.	Value stored in Processor memory.
14c. Event 14b.	Conc. Monitor Circuit.	Goes into test mode.	N/A
14d. 5 second pause.	Processor	Reads output of Conc. Monitor.	Continues if the difference between the 2 readings match a calculated difference. Cancels and prints difference. Cancels and prints message if 2 readings do not compare.
15. Test #12: Sterile Filter	COMP-1 PT1 SOL8 CK-4	Energized into 4Ø psi mode. Controls pressure. Energized. Seated by air pressure.	Compressed air enters the filter housing [FLT1].
15a. Up to 5 minutes of Pressurization.	PT-1 COMP-1	Monitors pressure.	Continues if 4Ø psi is reached within 5 minute period. Cancels and prints message **with no numbers if** 4Ø psi is not reached in 5 minutes.
15b. Housing reaches 4Ø psi within 5 minutes.	PT-1 COMP-1	Cycles on and off.	Housing maintained at 4Ø psi ± 1 for 5 minutes.
15c. End of 5 minute pressurization period.	COMP-1 SOL3 SOL4 CK-6	Disabled. Energized. Energized. Closed.	Ends stabilization period. Dumps Manifold pressure and seats CK-6.
15d. 15 second pause.	Processor PT-1	Reads psi in FLT1. Output to High Gain (.Ø39 psi).	Stores reading in memory. Cancels and prints message **with no numbers if** reading is <7Ø or >25Ø counts.

THEORY OF OPERATION

Event #	Component(s)	Action	Results
15e. Event 15d.	Processor	Monitors FLT1 pressure for 5 minutes. Stores the value of pressure decay [PS] passed tests.	Continues if pressure drops no more than allowed value in 5 minutes. Cancels and prints message **with test numbers if** pressure drop exceeds limit at any time during the test.
16. Test #13: Drain Check Valve.	SOL8 PT-1	De-energized. Back to low-gain.	Air trapped in FLT1 vents through SOL8, then through CK8 and down the drain hose.
16a. 1Ø seconds of draining.	Processor	Measures pressure in FLT1.	Continues, ending DIAGNOSTICS if pressure is within limits indicating that the drain check valve CK8 seals properly. Cancels and prints message if pressure does not fall within limits meaning that CK8 does not seal properly.
17. Successful conclusion of DIAGNOSTICS.	SOL2 Seal	Energizes. Deflates.	Success message printed. DIAGNOSTIC cycle complete.
17a. Return to ready condition.	Green Ready Light SOL2	De-energizes Lights.	Ready light illuminates.

4.2.2 DIAGNOSTICS CYCLE DESCRIPTION

The SYSTEM 1 Processor is capable of performing a self test of most of its internal systems. This test assures that the system is operating properly and assists in isolating failed components/systems. The test philosophy is sequential so that each test performed is based on the results/conditions of the prior tests. The test results are general indications of the condition of a specific portion of the SYSTEM 1 Processor. However, due to the interrelationship of the various components, faults cannot be localized by the Processor, the fault messages are general in nature.

The following is a general description of the DIAGNOSTIC tests performed and the sequence in which they occur:

"DIAGNOSTIC" button is pressed, Processor checks for lid closed and if lid is closed, enters "DIAGNOSTIC" mode and turns on "DIAGNOSTIC" lamp. Compressor is enabled to run under control of LS5.

Processor now starts to print header information and no further action takes place until printing completes. If at any time, the lid is open (LS4) or the ambient temperature sensor on the PCB reads < 13°C or > 5Ø°C, the cycle is canceled. Note that TC1, TC2, and TC3 cannot measure temperatures below room temperature.

TEST #1: A/D Converter. Processor reads the A/D converter addresses for ground and +5 VDC. Compares them against internal stored limits and continues if values are correct. Cycle cancels if readings are out of tolerance.

TEST #2: Inlet Temperature. Processor closes drain pinch valve (via SOL4) and opens dump valve (SOL5). This causes inlet water to flow down the drain past thermocouple TC3 which measures inlet temperature (43°C min.). The Processor waits a minimum of 2Ø seconds and a maximum of 18Ø seconds for the water to reach the proper temperature. If these criteria are met, the Processor continues, if not, the cycle cancels.

TEST #3: Fill Time. The drain pinch valve remains closed, and the water inlet valve (SOL7) opens. This causes water to flow through filter (FLT1) and fill chamber. This process is timed and must occur in less than 18Ø seconds. During the first 2Ø seconds of fill, the pressure transducer is monitored and this value is stored in the Processors's memory as fill pressure (FP). If the float switch (LS3) is detected to open, the Processor closes the inlet valve (SOL7) and continues. If the chamber does not fill in 18Ø seconds, the cycle cancels.

TEST #4: Pressure Transducer. The Processor opens the drain pinch valve (via SOL4) for 1 second, then the drain pinch valve is re-closed and the circulation pump (P1) is started and allowed to run for 4 seconds. The circulation pump is then turned off. The Processor waits for 25 seconds, then the Processor monitors the pressure transducer for 6Ø seconds. During this interval, the chamber pressure should be at zero. After this 9Ø seconds, the Processor compares the pressure transducer zero output and the fill pressure recorded during Test #3 against limits and continues if correct. If incorrect, the cycle cancels.

TEST #5: Circulation Pressure. The circulation pump (P1) is started after 3Ø seconds, the pressure transducer is monitored for 6Ø seconds. After this interval, the pressure reading is compared against the limits. If the value is good, testing continues. If not, the cycle cancels.

TEST #6: Thermocouple No. 1 and No. 2. The Processor compares the readings of thermocouple TC1 and TC2 to see if they are within 3°C or 6 counts of each other, if they are, the test continues, if not, the cycle cancels.

TEST #7: Circulation Valve. The Processor now closes the circulation pinch valve (via SOL3) stopping fluid circulation in the system. The Processor waits 1Ø seconds and then reads the pressure transducer for 2Ø seconds to see that system pressure has dropped > 2.5 from when the circulation valve opened. If it has, testing continues, if not, the cycle cancels.

The Processor opens the circulation pinch valve (via SOL3) and waits 5 seconds for the chamber fluid level to stabilize. The output of the float switch (FL1) is tested to see if the chamber is full. If the chamber is not full, the Processor stops the circulation pump (P1), opens the water inlet valve (SOL7) until the float switch opens again. The Processor then restarts the circulation pump (P1), (note: Processor will wait indefinitely if required for chamber to fill) then testing continues.

TEST #8: Heat Rate. The Processor then turns the heater on and waits 3Ø seconds. After 3Ø seconds, the temperature of thermocouple #1 (TC1) is stored by the Processor. The Processor waits for an additional 6Ø seconds and then reads TC1 again. The difference between the 2 readings must be at least 1°C (1.8°F). This test is repeated 3 times before it is determined to be a failure. However, it must only pass once. If all conditions are met, the cycle continues, if not, the cycle cancels.

The Processor then turns the heater on and waits 3Ø seconds. After 3Ø seconds, the temperature of thermocouple #1 (TC1) is stored by The Processor. The Processor waits for an additional 6Ø seconds and then reads TC1 again. The difference between the two readings must be at least 1°C (1.8°F). This test is repeated three tiimes before it is determined to be a failure. However, it must only pass once. If all conditions are met the cycle continues, if not, the cycle is cancelled.

TEST #9: Drain Valve. The Processor now examines the float switch (LS3) to see if it is still open. If the switch is not open, then fluid has been lost from the chamber during the preceding 1.5 to 4.5 minute interval and the cycle cancels. If the switch is still open, the cycle continues.

TEST #1Ø: Drain Time. The Processor now opens the drain pinch valve (via SOL4) and closes the circulation pinch valve (via SOL3). The float switch (LS3) is monitored to determine when the chamber fluid level drops because the circulation pump is now forcing fluid down the drain. If the float switch closes in less than 5 seconds, the test passes. If it takes greater time than 5 seconds, then the cycle cancels. The Processor continues to drain for a total of 4Ø seconds, it then opens the circulation pinch valve (via SOL3) and turns off the circulation pump (P1).

TEST #14: High Pressure Pump Monitor. Performed between test #1Ø and #11, or during the last rinse of a sterile processing cycle. The Processor monitors the operation of the high pressure pump during each exposure and DIAGNOSTIC cycle. This is done during the chamber drain procedure. When the drain valve is opened the system will turn off the high pressure pump and then monitor the LS6 output. This output must read four counts (or 5 VDC measured across open LS6). If the output is four, the high pressure pump is turned on, the drain valve is shut and the switch output is monitored again. It must read zero counts (or < .5m VDC measured across closed LS6), indicating that the pump is "on" in this mode. After the test passes, the drain continues as above. If the system software reads an improper value during the test, an H.P. Pump error message will be printed and the cycle will cancel.

In a DIAGNOSTIC: H.P. Pump Fault
In a sterile processing cycle: H.P. Pump Failure

TEST #11: Concentration Monitor. The Processor then reads and stores the output of the concentration monitor circuit. The Processor then sets the concentration monitor circuitry into the test mode. The Processor waits 5 seconds and takes another reading. The 2 readings are compared to a calculated difference. If the test passes, the cycle continues, if it fails, the cycle cancels. (Note: shorted and open concentration probes will pass the test).

TEST #12: Sterile Filter. The Processor commands the compressor into its 4Ø psi (276 kpa) mode, where pressure is controlled by the pressure transducer (PT1) through the control electronics. The air/water solenoid valve (SOL8) is energized opening a path for compressed air, to enter the filter housing (FLT1). The Processor now waits for the housing to reach 4Ø psi (276 kpa) as indicated by LS5. If this pressure is not reached in 5 minutes, the cycle cancels and no test values are printed out.

After the housing reaches 4Ø psi (276 kpa), the Processor enters a 5 minute hold period where the compressor will automatically cycle on and off to maintain the housing at 4Ø psi (276 kpa). At the end of the 5 minute period, the compressor is turned off.

If the pressure transducer reads less than 97, (pressure in A-D counts) the cycle cancels and no test values are printed out.

4.2.2 DIAGNOSTIC CYCLE DESCRIPTION (continued)

The Processor now waits for 15 seconds and then stores the pressure reading of the filter housing. If this pressure is < 7Ø or > 25Ø, then the cycle cancels and no test values are printed out. The Processor enters the 5 minute test period and continuously monitors housing pressure. If the pressure drop exceeds 1.2 psi (8 kpa) at any time during the test, the cycle cancels and the test values are printed (note: the 1.2 psi (8 kpa) threshold is a function of the DIP switches). If the pressure remains good throughout the 5 minute period, the cycle continues.

TEST #13: Drain Check Valve. The Processor now de-energizes the air/water valve (SOL8) and waits for 1Ø seconds. During this time the air trapped in the filter housing (FLT1) vents through the air/water valve (SOL8) through the drain check valve (CK8) and down the drain hose. After the 1Ø second wait, the pressure in the filter housing (FLT1) is measured and compared against limits to see if the drain check valve (CK8) seals properly. If this test passes, the DIAGNOSTICS are completed successfully, if it fails, the cycle cancels.

The final event that occurs at the end of the successful DIAGNOSTICS is the venting of seal pressure through solenoid valve (SOL2).

THEORY OF OPERATION 90A1/90A2 MODELS

DIAGNOSTIC CYCLE CANCELLATION DESCRIPTION

"A/D Converter Fault"	GND and or 5 VDC is out of tolerance.
"Inlet Temp. < 43 Degrees"	39 degrees is not attained within 3 minutes.
"Fill Time > 3 Minutes"	LS3 does not open within 180 seconds of start of fill.
"Pressure Transducer Fault"	Inlet pressure (FP) was less than 5.85 psi. or Fill Zero (FZ) was greater than 1.17 psi.
"Circulation Pressure Low"	Circulation Pressure is less than FZ+2.75 cts.
"Thermocouple Failed"	TC1 and TC2 do not read within 3 counts of each other.
"Circulation Valve Fault"	System pressure does not decrease by 2.57 counts minimum.
"Heat Rate low"	Temperature does not increase by 1 degree Celsius.
"Drain Valve Fault"	LS3 closes during the monitoring period indicating fluid has leaked from the chamber.
"Drain Time Fault"	LS3 does not close within 5 seconds.
"H.P. Pump Fault"	LS6 does not open within 10 seconds following Drain Time Test or LS6 does not close within 20 seconds after H.P. Pump is energized.
"Concentration Monitor Failed"	CD and CL do not match a calculated difference.
"Sterile Filter Membrane Test"	(No numbers) S.F. Housing does not reach 40 psi. within 5 minutes or the X10 circuitry senses < 70 or > 250 counts.
"Sterile Filter Membrane Test"	(Numbers printed) Pressure drop greater than the FF value at any point during the pressure hold test.
"Drain Check Fault"	Pressure after 10 seconds of air release is less than 10 counts or greater than 30 counts.
"Ambient Temperature Fault"	Room temperature sensor senses a temperature of greater than 50 degrees Celsius or less than 13 degrees Celsius.

4.3 CANCEL MODE DESCRIPTION (Refer to Diagrams)

The SYSTEM 1 Processor cancel mode is designed to safely terminate the cycle in the event of a problem. It has 2 methods of initiation: 1) the SYSTEM 1 Processor can initiate a cancel when out of tolerance conditions are detected during a exposure or DIAGNOSTIC cycle; 2) the operator may initiate a cancel cycle by depressing the "Cancel" button twice within 8 seconds.

Both cancels operate the same way after they have been initiated. The following is the sequence of events that occur when the cancel mode is initiated.

All solenoid valves are de-energized and all pumps stopped. The air compressor is enabled to run under control of LS5. The heater is disabled. The cancel lamp is illuminated and all other lamps turned off. The Processor then enters its drain mode where the circulation pinch valve is closed (via SOL4) the drain pinch valve is opened, and the circulation pump (P1) is functioning to drain the water from the chamber (pumping to drain). This drain period lasts 4Ø seconds. During the 4Ø second drain, the cancel message is printed.

At the end of the 4Ø second drain, the Processor stops the circulation pump (P1) and opens the circulation pinch valve (via SOL4). The Processor illuminates the "Complete" lamp and waits, the "Cancel" lamp is also illuminated at this point.

At this time, the Processor is waiting for the operator to press the "Cancel" button to release the seal. After the operator presses the "Cancel" button, the Processor disables the air compressor and deflates the seal (via SOL2).

After 15 seconds, SOL2 is de-energized and only the "Ready" lamp is illuminated. For Sterile processing cycles, the "CHAMBER OPEN" time is printed and the paper advanced during the 15 second seal bleed down time.

4.4 TIME SET MODE DESCRIPTION

1. With the green **"Ready"** light on, **press and hold "Cancel"** button. All indicators go OFF. Hold "Cancel" button and press "Start" button.

   The COMPLETE, CANCEL, and DIAGNOSTICS indicators come ON and the printer prints the following:

   TO SET HOURS
   +1 PRESS DIAG.
   -1 PRESS START
   PRESS CANCEL TO ADV
   TIME IS: HH : MM

2. Press DIAGNOSTICS to advance the hour or START to set the hour back.

   The printout shows the new time.

   TIME IS: HH : MM

3. Press CANCEL and review further instructions on printout.

   TO SET MINUTES
   +1 PRESS DIAG.
   -1 PRESS START
   PRESS CANCEL TO ADV
   TIME IS: HH : MM

4. Press DIAGNOSTICS to advance the minutes or START to set the minutes back.

   The printout shows the new time.

   TIME IS : XX : XX

5. Press CANCEL to return to READY.

   The COMPLETE, CANCEL and DIAGNOSTICS indicators go OFF and the READY indicator goes ON.

6. The time set mode function can be entered with the lid closed or with it open. This mode cannot be entered during a cycle because the "START" button is inactive.

4.5 FLUID FLOW PATH DESCRIPTION

A water tight processing chamber is formed when the inflatable seal forces the processing adapter tray against the upper seal on the lid.

During the "dump" portion of the cycle, tap water flows from the inlet, through SOL5, past TC3, and out the drain. The chamber and main system plumbing are closed-off by the actuated drain pinch valve.

During chamber filling, tap water flows through SOL7 and CK4 to the outside surface of the sterile filter membrane. A small amount of inlet water is orificed to drain, carrying with it trapped air from the filter housing. Sterile water flows from the inside surface of the sterile filter membrane, through the pressure transition blocks, and into the chamber. During fill, air exhausts through the vent hole in the lid, into the float block, through CK2 and CK3, and out the drain. At completion of fill, water enters the float lock and raises the float, closing SOL7.

During circulation, fluid exits the chamber through the right drogue of the processing adapter tray (under the sterilant container), through the drain transition block, past TC1, and into the heater housing. Fluid continues past the heater and is pumped by the circulation pump through the circulation valve V6 to the pressure transition block past CP1/CP2 and TC2, and into the processing chamber through the spray heads and rigid container/adapter interface.

When appropriate, a portion of the fluid is pumped through PUMP-2 (which is limited to (18 psi) and out the smaller connector post/drogue to the processing adapter to provide higher-pressure fluid for special applications. Also, a portion of the fluid is circulated through the inside surface of the sterile filter membrane.

The chamber is drained by the ciruclation pump through drain valve V5 and out the drain after circulation valve V6 is closed.

4.6 AIR SYSTEM DESCRIPTION (Air Manifold)

Air compressor output enters air manifold at fitting.

- It maintains 31 to 43 psi (217 to 293 kpa) in the air system.
- It is enabled by the microprocessor through the PCBd (PCB-2) and is continuously enabled for the duration of the cycle.

Compressor relief solenoid valve (SOL1) is de-energized co-incidently with the compressor to vent the compressor output line to atmosphere to prevent compressor start under load. It is also energized co-incidently with the compressor. Check valve prevents loss of system air pressure.

Compressor pressure limit switch (LS5) controls air compressor operation. It opens at 4Ø ± 3 psi (276 ± 17 kpa) and closes when a differential of 5 ± 1 psi is sensed.

Inflatable seal is inflated from fitting through check valve which maintains air pressure until the seal solenoid valve (SOL2) is energized open, venting the seal to atmosphere.

Seal pressure limit switch (LS2) prevents energizing of water flow related components until seal pressure reaches 3Ø psi (2Ø7 kpa) to close the switch. Should the seal pressure drop below 26 psi (18Ø kpa) during operation, the switch will open, the cycle will cancel, and a drain sequence will be initiated.

Pressure test solenoid (SOL8) is supplied by air system pressure from fitting through check valve. During a sterile processing cycle this pressure is dead-headed to the de-energized pressure test solenoid. It is used during DIAGNOSTICS.

Air pressure to operate the drain and circulate pinch valves is supplied through fittings (respectively) and the pinch valves are operated by the circulation and drain solenoid valves (SOL3 and SOL4).

4.7 STERILE FILTER HOUSING ASSEMBLY DESCRIPTION

The assembly houses a Ø.2 micron absolute filter to provide sterile water to rinse processed devices and also provides an air-tight chamber around the outside of the filter to accommodate forward-flow tests for filter integrity.

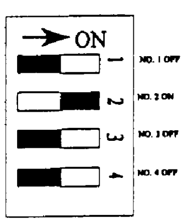
Following replacement of the disposable filter cartridge, through the removable filter housing cap, the filter is surrounded by air, both inside and outside. During a fill, water enters through a check valve (CK4) and fills around the outside of the filter. Air trapped outside the filter is vented to drain through a sintered-bronze filter in the housing through the normally de-energized air/water valve (SOL8), and is vented to drain through CK8 @ 6 psi.

Water passes through the sterile filter and through both the housing's bottom port and standpipe to the Processor's system plumbing. During sterile processing cycles, sterilant circulates into the top port and out the standpipe bottom port to sterilize the inside of the filter and to remove any trapped air. Also, during circulation, a positive pressure is generated by the circulation pump (P1) and held in the filter housing by the inlet and drain check valves (CK4 and CK8, respectively).

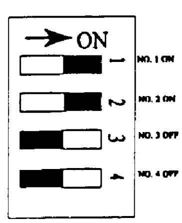
During DIAGNOSTICS, the sterile filter membrane test is conducted to verify that the Ø.2 micron absolute filter membrane's integrity is not compromised. This is done by detecting air diffusion rates through a fully wetted membrane. The air/water valve (SOL8) is energized to close the path to drain and to open the filter housing chamber, outside the sterile filter to the air manifold. Housing pressure is allowed to stabilize, and then its decay is monitored by the pressure transducer (PT1).

Sterile Filter Selection Dip Switches

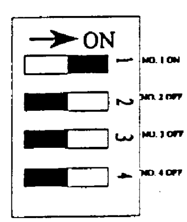
The Processor has the capability of using 2 or more different types of filter cartridges. This feature is implemented via software changes (internal values) that are set by dip switches. To change the dip switches, open the control panel and use a pen to move the switches to coincide with the positions shown below for the filter P/N being used:



A1505



A1502



A1525

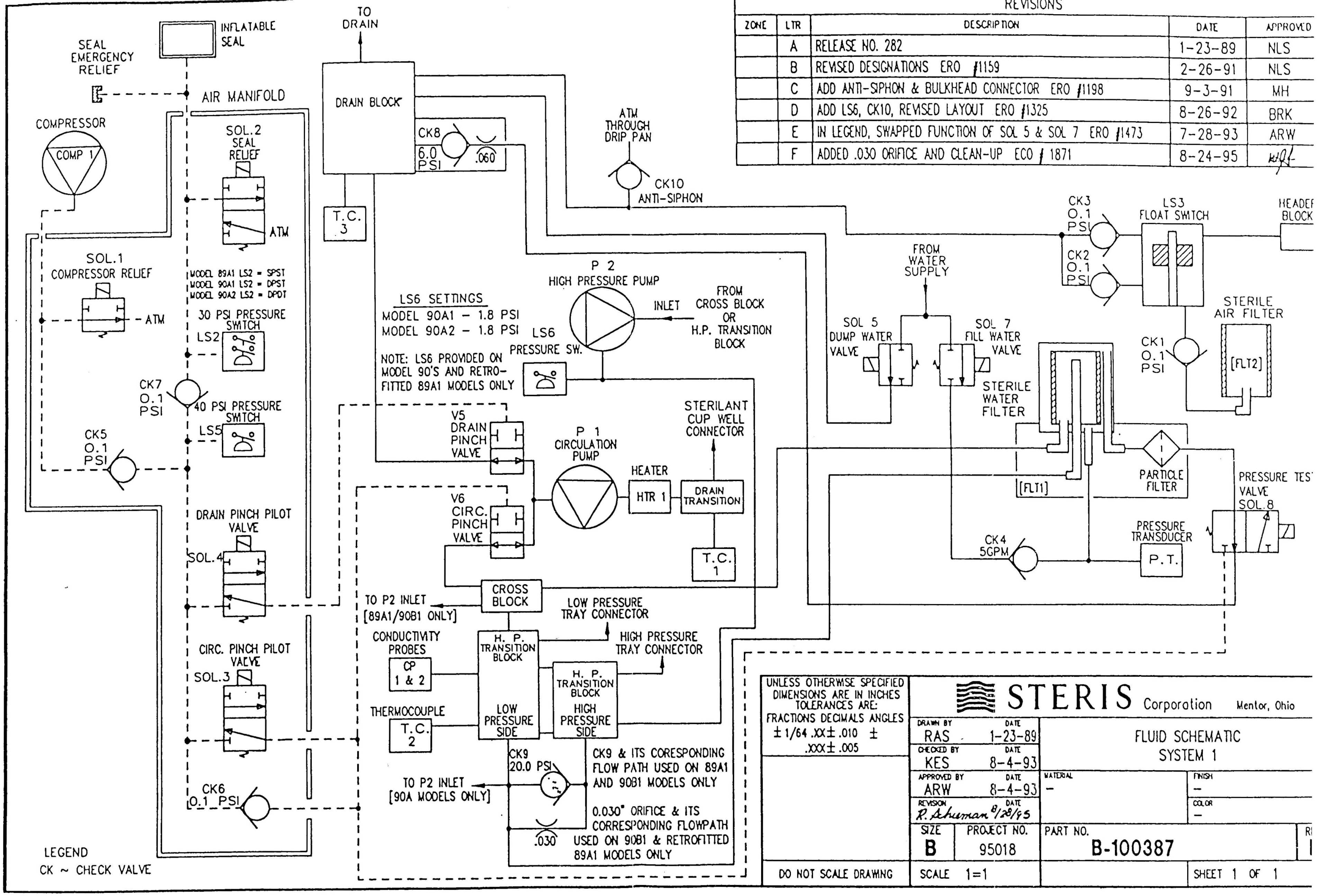
4.8 FLOAT BLOCK ASSEMBLY DESCRIPTION

The float block assembly has 2 basic functions. First, to maintain near-neutral chamber-fill completion and to detect loss of sterilant from the chamber.

During fills, check valves (CK2 and CK3) allow air to be purged from the chamber to drain, and at the end of fills, allow any excess fluid to exhaust. As fluid is pumped to drain, its volume in the chamber is replaced by air drawn through sterile air filter (FLT2) and check valve (CK1).

Chamber fills are terminated when air has been exhausted to drain. Water from the fill enters the float block assembly and raises the float switch (LS3). Loss of fluid from the system can be detected by a drop of the float switch. This occurs when fluid volume loss from the system is detected by a drop of the float switch. This occurs when a sufficient fluid volume loss from the system creates a negative pressure in the chamber and float block assembly and cracks open check valve (CK1), which lets air in and displaces the fluid from the float block.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE NO. 282	1-23-89	NLS
	B	REVISED DESIGNATIONS ERO #1159	2-26-91	NLS
	C	ADD ANTI-SIPHON & BULKHEAD CONNECTOR ERO #1198	9-3-91	MH
	D	ADD LS6, CK10, REVISED LAYOUT ERO #1325	8-26-92	BRK
	E	IN LEGEND, SWAPPED FUNCTION OF SOL 5 & SOL 7 ERO #1473	7-28-93	ARW
	F	ADDED .030 ORIFICE AND CLEAN-UP ECO # 1871	8-24-95	[illegible]



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:	STERIS Corporation Mentor, Ohio		
FRACTIONS DECIMALS ANGLES ±1/64 .XX±.010 ± .XXX±.005	DRAWN BY RAS DATE 1-23-89	FLUID SCHEMATIC SYSTEM 1	
	CHECKED BY KES DATE 8-4-93		
	APPROVED BY ARW DATE 8-4-93	MATERIAL –	FINISH –
	REVISION R. Schuman DATE 8/28/95		COLOR –
	SIZE B / PROJECT NO. 95018	PART NO. B-100387	
DO NOT SCALE DRAWING	SCALE 1=1		SHEET 1 OF 1

TROUBLESHOOTING

INDEX

GENERAL TROUBLESHOOTING HINTS

PRINTOUTS

The printouts generated with each cycle provide the most accurate and dependable information available for diagnosis of most problems. The printouts produced preceding the failure will often provide clues as to the Processor's operation and conditions, which may have led to the failure. The printouts will provide purely objective information, where observations by the operator may be subjective.

OBSERVATIONS

Whenever possible, attempt to verify the problem yourself. Observe the Processor during the cycle very closely, watching the drain hose outflow, observing the activity through the window in the chamber, and listening for normal and abnormal sounds which may provide very helpful clues in your diagnosis.

THINK
then
TAKE ACTION

Before turning the Processor over and removing the shroud, make sure that you have done all that can be done "from the top" first. An RS-232 port is provided for troubleshooting assistance using a hand terminal, or an IBM PC (or equivalent). A command description is provided in section 5.5. of this manual for using this feature.

SHROUD REMOVAL

Before turning the Processor over to remove the shroud, remove the adapter tray and suction the water from the inside of the connector posts. Turn the Processor over in a counter-clockwise direction (electronics over the top) to avoid any water from spilling into the electronics department. Note: necessary precautions should be taken to prevent the lid and control panel from being scratched or damaged while turning the Processor over.

CAUTION

To prevent damage to the heater, do not attempt to operate the Processor while it is in the inverted position.

<u>MODELS 9ØA1 AND 9ØA2</u>

DIAGNOSTIC CYCLE

FIRMWARE
P/N 3ØØØ91
REV A

A/D CONVERTER FAULT

<u>FAILURE OCCURS IF:</u>

- GND > Ø.117 VOLTS DC or
- SUPPLY < 4.778 VOLTS DC

<u>USER CORRECTIVE ACTIONS:</u>

- (NONE)

<u>MOST PROBABLE CAUSES:</u>

- Defective controller board
- Faulty grounding of power supply board
- Defective power supply board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

A/D CONVERTER FAULT
GND READS 0.00 VOLTS
REF READS 0.00 VOLTS

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 87

A/D CONVERTER FAULT

1. Verify integrity of grounding screw for power supply board.
2. Substitute controller and re-test.
3. Verify integrity of all connectors to controller and power supply boards.
4. Check that power supply output voltage is within specifications (See 5.7.16).
5. Check wiring harness for pinched or damaged wires.
6. Call STERIS for additional help.

INLET TEMPERATURE < 43 DEGREES CENTIGRADE

FAILURE OCCURS IF:
- Temperature @ TC3 < 43°C

USER CORRECTIVE ACTIONS:
- Check for water supply turned off
- Check for kinked inlet and drain hoses
- Check for clogged prefilter(s)
- Check hot water temperature

MOST PROBABLE CAUSES:
- Air system did not reach pressure
- Loose thermocouple connection to board
- Defective TC3 thermocouple
- Defective controller board
- Defective SOL5

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

INLET TEMP. < 43 DEG
READS: 34.80 DEG C

========================

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

========================

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 961

INLET TEMPERATURE < 43 DEGREES CENTIGRADE

1. Verify that all user corrective actions have been taken

2. Does air system get up to pressure? If YES, go to next step.
   If NO: Check for leaking inflatable seal (See 5.7.3)
   Check for compressor (See 5.7.4), SOL8 and LS5
   Check for any other air system leaks (See 9.14.4)

3. Does water flow out of drain hose during dump? If YES, go to next step.
   If NO: Check SOL5 and board output to SOL5 (See 5.7.9.2)
   Check LS2 and controller board (See 5.7.9.1)
   Check for clogged inlet screen

4. Does hand terminal readout of (TC3 + room temp sensor/2) indicate actual water temperature? If YES, go to next step.
   If NO: Check board connections for TC3 at CN1
   Check TC3 thermocouple and wiring (See 5.7.9.3 and 9.15)
   Check controller board TC3 channels (See 5.7.9.3)
   Check controller board room temp sensor (See 5.7.9.3)

5. Call STERIS for additional help.

FILL TIME > 3 MINUTES

FAILURE OCCURS IF:

- Float does not rise in 3 minutes

USER CORRECTIVE ACTIONS:

- Check for water supply turned off
- Check for kinked inlet and drain hoses
- Check for clogged prefilter(s)

MOST PROBABLE CAUSES:

- Air system did not reach pressure
- Drain pinch valve not closing
- Defective float switch/connectors
- Defective SOL7
- Leaking float block check valves
- Defective controller board
- Sticking Kepner Valve

NOTE: SFM can also cause this problem

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

FILL TIME > 3 MIN.
READS: 3.02 MIN.

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

FILL TIME > 3 MINUTES:

1. Verify that all user corrective actions have been taken.

2. Does air system get up to pressure? If YES, go to next step
   If NO: Check for leaking inflatable seal (See 5.7.3)
   Check air compressor (See 5.7.4), SOL8, and LS5
   Check for any other air system leaks (See 9.14.4)

3. Does water enter the processing chamber? If YES, go to next step.
   If NO: Check SOL7 and board output to SOL7 (See 5.7.9.1)
   Check for stuck Kepner Valve
   Check for completely clogged sterile water filter

4. Is water substantially flowing out drain hose while attempting to fill? If NO, go to next step.
   If YES: Check that drain pinch valve is closing (See 5.7.15)
   Check that SOL5 is shutting off dump flow (See 5.7.9.1)

5. Is water trickling out drain hose while attempting to fill or when full? If NO, go to next step.
   If YES: Check that drain pinch valve is closing (See 5.7.15)
   Check drain check valve (See 5.7.8)

6. Does water leak from lid while attempting to fill or when full? If NO, go to next step
   If YES: Check for severe back pressure in drain line
   Check float switch (and connections) for proper operation (See 5.7.9.9)
   Check for sticking/leaking check valves in float block (See 5.7.7)
   Check SOL8 (air/water Solenoid) (See 5.7.1Ø.1)
   Check for sticking drain check valve (See 5.7.8)

7. Call STERIS for additional help after checking the following items:
   Check for clogged sterile water filter
   Check for sticking Kepner Valve
   Check for clogged inlet screen

PRESSURE TRANSDUCER FAULT

<u>FAILURE OCCURS IF:</u>

- FP < 5.85 psi or
- FZ > 1.17 psi

<u>USER CORRECTIVE ACTIONS:</u>

- Check for tight SFH Cap
- Check for kinked drain hose
- Check for drain hose end submerged
- Check for rise in drain hose slope
- Check for low inlet pressure (<2Ø psi)

<u>MOST PROBABLE CAUSES:</u>

(IF FP < 5.85)

- Clogged prefilter(s)
- Intermittently low inlet pressure
- Kinked inlet hose
- Float block full
- Defective/clogged pressure regulator

(If FZ > 1.17)

- Blocked or kinked drain hose
- Defective float block check valves
- Xducer out of calibration
- Defective controller board
- Defective pressure transducer

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

PRESSURE XDUCR FAULT
ZERO READS 2.15 PSI
INLET READS 20.25 PSI

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

PRESSURE TRANSDUCER FAULT

1. Verify that all user corrective actions have been taken.

2. Does water enter the processing chamber? If YES, go to next step.
   If NO: Check for full float block (if full, determine and correct cause)
   Check float switch (and connections) for open circuit (See 5.7.9.8)

3. Does inlet read < 5.85? If NO, go to next step.
   If YES: Check for low inlet pressure to the Processor
   Check for clogged prefilter(s)
   Check for low (or intermittently low) facility water pressure
   Check for kinked inlet hose
   Check for maladjusted/defective/clogged pressure regulator
   Check for clogged inlet screen
   Check pressure transducer calibration (See 9.2Ø.3)
   Check pressure transducer and control circuitry (See 5.7.9.6)
   Check for sticking Kepner Valve

4. Does zero read > 1.17? If NO, go to next step.
   If YES: Check for severe back pressure in drain line
   Check for sticking check valves in float block (See 5.7.7)
   Check SOL8 (air/water solenoid) (See 5.7.1Ø.1)
   Check pressure transducer calibration (See 9.2Ø.3) 5.7.5
   Check pressure transducer and control circuitry (See 5.7.9.6)
   Check for sticking drain check valve (See 5.7.8)
   Check for clogged sterile water filter
   Check for leaking SOL7 when de-energized
   Check for clogged metal filter in SFH

5. Call STERIS for additional help.

CIRCULATION PRESSURE LOW

FAILURE OCCURS IF:

- CP < (2.75 counts + FZ)

USER CORRECTIVE ACTIONS:

- Check for tight SFH cap
- Check that container is in place when a General Processing or Directed Flow Tray is used
- Check for empty sterilant compartment
- Check for unobstructed drain screen

MOST PROBABLE CAUSES:

- Defective circ pump
- Defective SSR 4
- Defective controller board
- Defective pressure transducer
- Leaking drain pinch valve sleeve
- Leaking drain check valve

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

CIRCULATION PRES. LOW
READS 0.07 PSI

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

CIRCULATION PRESSURE LOW

1. Verify that all user corrective actions have been taken.

2. Does the processing chamber stay full after filling? If YES, go to next step.
   If NO: Check for leaking drain pinch valve sleeve
   Check SOL4 and board output to SOL4 (See 5.7.9.1)

3. Is circulation of water visible just before failure? If YES, go to next step.
   If NO: Check that circ pump is being energized (See 5.7.13)
   Check SSR4 (see 5.7.9.2)

4. Does FZ = Ø? If NO, go to next step.
   If YES: Check pressure transducer calibration (See 9.2Ø.3)
   Check pressure transducer and control circuitry (See 5.7.9.6)

5. Call STERIS for additional help after checking the following items:
   Check for leaking drain check valve (See 5.7.8)
   Check for clogged sterile water filter
   Check SOL8 (air/water solenoid) (See 5.7.1Ø.1)
   Check for clogged metal filter in SFH

THERMOCOUPLE FAILED

FAILURE OCCURS IF:

- (TC1 - TC2) > 3°C or
- (TC2 - TC1) > 3 °C

USER CORRECTIVE ACTIONS:

- (NONE)

MOST PROBABLE CAUSES:

- Loose thermocouple connection to board
- Defective TC1 or TC2 thermocouple
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ____________

REMARKS: ____________

THERMOCOUPLE FAILED
READS #1 152.40 #2 41.20

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID:____________
SERIAL # 100004
CYCLE COUNT: 961

THERMOCOUPLE FAILED

1. Is the cooling fan for the electronics enclosure running? If YES, go to next step.
   If NO: Check cooling fan and wiring
   Verify that controller board has not been damaged (See 5.7.9.4)

2. Is the cooling fan screen blocked? If NO, go to next step.
   If YES: Clean cooling fan and screen
   Verify that controller board has not been damaged (See 5.7.9.4)

3. Call STERIS for additional help after checking the following items:
   Check board connections for TC1 and TC2 at CN1
   Check TC1 and TC2 thermocouples and wiring (See 5.7.9.4 and 9.15)
   Check controller board TC1 and TC2 channels (See 5.7.9.4)

CIRCULATION VALVE FAULT

FAILURE OCCURS IF:

- (CP - CZ) < 2.5 COUNTS

USER CORRECTIVE ACTIONS:

- Check for tight SFH cap
- Check that container is in place when a General Processing Tray is used

MOST PROBABLE CAUSE:

- Leaking circ pinch valve sleeve
- Leaking air/water solenoid valve
- Defective SOL3
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

CIRC. VALVE FAULT 6.00

========================

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

========================

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 961

CIRCULATION VALVE FAULT

1. Verify that all user corrective actions have been taken.

2. Does the circulation of water stop just before failure? If YES, go to next step.
   If NO: Check SOL3 and board output to SOL3 (See 5.7.9.1)

3. Are large bubbles prominent in the chamber just before failure? If NO, go to next step.
   If YES: Check for leaking circ pinch valve sleeve

4. Call STERIS for additional help after checking the following items:
   Check for leaking SOL8 (air/water solenoid) (See 5.7.1Ø.1)
   Check pressure transducer and control circuitry (See 5.7.9.6)

HEAT RATE LOW

FAILURE OCCURS IF:

- Temperature @ TC1 increases by < 1 DEG C/minute

USER CORRECTIVE ACTIONS:

- Check that container is in place when a General Processing Tray is used
- Check for incoming water temperature > 5Ø°C

MOST PROBABLE CAUSES:

- Heater element open
- LS1 tripped
- Defective SSR1
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

HEAT RATE LOW
READS -0.10 DEG/MIN.

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

HEAT RATE LOW

1. Verify that all user corrective actions have been taken.

2. Is the reading a negative number, or < Ø.3Ø DEG/MIN? If NO, go to next step.
   If YES: Check thermal cutout switch (LS1) for trip (See 5.7.14)
   Check continuity of heater element
   Check SSR1 and controller board

3. Call STERIS for additional help after checking the following items:
   Check that output of SSR1 is at line voltage
   Check that heater element is not cutting out/off as it heats up
   Check that inlet water temperature is not over 6Ø°C
   Check that SOL7 is not leaking water through it when de-energized
   Check wiring for marginal connectors
   Check that cooling fan in electronics compartment is running

DRAIN VALVE FAULT

FAILURE OCCURS IF:
- Float drops before drain starts

USER CORRECTIVE ACTIONS:
- Check for rise in drain hose slope
- Check for > 5Øcc of fluid in drip pan
- Check for cracks or leaks in Tray

MOST PROBABLE CAUSES:
- Leaking circ pump
- Leaking HP pump
- Leaking air inlet check valve
- Leaking drain check valve
- Leaking lid assembly
- Cracked drip pan assembly

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

DRAIN VALVE FAULT

========================

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

========================

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

DRAIN VALVE FAULT

1. Verify that all user corrective actions have been taken.

2. Is there excess (>5Øcc per cycle) fluid in drip pan? If NO, go to next step.
   If YES:
   - Re-confirm that tray is not cracked or otherwise leaking (See 9.4.1)
   - Check lid for any cracks or leaks and for damage/separation of upper seal (particularly from header block or from cracks across upper seal) (See 9.4.1)
   - Check drain tube for leaks
   - Check lid and latch bar for proper alignment
   - Inspect QD posts for scratches or other damage

3. Is fluid leaking from shroud during operation? If NO, go to next step.
   If YES:
   - Check circ pump for leak at pump head
   - Check HP pump for leak at pump head
   - Check for cracked drip pan assembly
   - Check all hoses, tubing, and fittings for leaks

4. Is fluid present in the tube to which the sterile air filter is attached? If NO, go to next step.
   If YES:
   - Check for leaking air inlet check valve (See 5.7.7)

5. Is fluid trickling out of drain hose just before failure? If NO, go to next step.
   If YES:
   - Check that drain pinch valve is closing (See 5.7.15)
   - Check drain check valve(See 5.7.8)
   - Check air compressor (See 5.7.4), SOL8 and LS5
   - Check for any other air system leaks (See 9.14.4)

6. Call STERIS for additional help after checking the following items:
   - Check float switch (and connections) for proper operation (See 5.7.9.8)
   - Check controller board and CN9 for reliable float switch sensing

DRAIN TIME FAULT

FAILURE OCCURS IF:

- Float does not drop within 5 seconds of draining

USER CORRECTIVE ACTIONS:

- Check for wet sterile air filter
- Check drain hose for kink or rise
- Check drain hose for end submerged
- Check for fluid leaking from lid

MOST PROBABLE CAUSES:

- Obstruction in tray screen
- Sticking air inlet check valve
- Clogged sterile air filter
- Intermittent circ pump operation
- Drain pinch valve not opening
- Defective float switch

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

DRAIN TIME FAULT

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 961

DRAIN TIME FAULT

1. Verify that all user corrective actions have been taken.

2. Does water appear to be draining freely just before failure? If YES, go to next step.
   If NO: Check that tray screen is unobstructed
   Check for sticking air inlet check valve (See 5.7.7)
   Check that sterile air filter is not clogged
   Check for intermittent operation of circ pump (See 5.7.13)
   Check that drain pinch valve is opening (See 5.7.15)
   Check that internal surfaces of drain pinch valve sleeve are not sticking together

3. Call STERIS for additional help after checking the following items:
   Check float switch (and connections) for proper operation (See 5.7.9.8)
   Check controller board and CN9 for reliable float switch sensing

CONCENTRATION MONITOR FAILED

FAILURE OCCURS IF:

- Concentration not equal to calculated value

USER CORRECTIVE ACTIONS:

- Check for fluid in drip pan
- Check that sterilant was not used

MOST PROBABLE CAUSES:

- Common return line (wire #7) to chassis ground short
- Defective controller board
- Defective thermocouple
- Defective heater element
- Sticking air inlet check valve
- Restricting float block check valves

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

CONC. MONITOR FAILED
READS 77.00
SHOULD READ > 84.00

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

CONCENTRATION MONITOR FAILED

1. Verify that all user corrective actions have been taken.

2. Measure resistance from common return line (wire #7) to chassis. Is resistance > 5ØK ohms? If YES, go to next step.
   If NO:
   - Check for pinched wire in wiring harness
   - Check for shorted (to casing) thermocouple (See 9.15)
   - Check heater element for deterioration or short to casing
   - Substitute controller board and re-test

3. Call STERIS for additional help after checking the following items:
   - Check conductivity probes for cleanliness (See 5.7.9.4)
   - Check integrity of wiring from conductivity probes to CN9 (See 5.7.9.5)
   - Check for sticking air inlet check valve (See 5.7.7)
   - Check for restricting float block check valves (See 5.7.7)
   - Check for shorted (to casing) thermocouple (See 9.15)
   - Check heater element for deterioration or short to casing
   - Substitute controller board and re-test

STERILE FILTER MEMBRANE TEST FAILED

<u>FAILURE WITHOUT NUMBERS OCCUR IF:</u>

- Pressure < 37.85 psi or X1Ø reading of < 7Ø or > 25Ø counts after 5 minutes or pressurization

<u>USER CORRECTIVE ACTIONS:</u>

- Check and wet O-ring in SFH cap

<u>MOST PROBABLE CAUSES:</u>

- Defective sterile water filter
- Air system did not reach pressure
- Leaking Kepner Valve
- Leaking air/water solenoid valve
- Leaking SF housing or cap
- Leaking CK6 check valve in air manifold
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ______

REMARKS: ______

DIAGNOSTIC CYCLE

STERILE FILTER MEMBRANE TEST
FAILED

OPERATOR ID: ______
SERIAL # 100004
CYCLE COUNT: 961

STERILE FILTER MEMBRANE TEST FAILED

1. Verify that all user corrective actions have been taken.

2. Does failure occur without numbers? If NO, go to step 5.
   If YES: Perform pressure hold test (See 5.7.1Ø)

3. Does SF housing get up to pressure? If YES, go to next step.
   If NO: Check for leaking inflatable seal (See 5.7.3)
   Check air compressor output (See 5.7.4) and SOL8
   Check for leaking Kepner Valve (See 5.7.1Ø)
   Check for leaking air/water solenoid valve (See 5.7.1Ø.1)
   Check for leaking SF housing and cap (See 5.7.1Ø)
   Check for leaking CK6 in air manifold (See 5.7.18)
   Check for leaking pressure transducer (See 5.7.1Ø.1)
   Check for any other air system leaks (See 9.14.4)

4. Is reading in X1Ø mode < 7Ø or > 25Ø counts? If NO, go to step 7.
   If YES: Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of set

5. Is the difference between the first and second numbers within one (1) count of FF valve? If YES, go to next step.
   If NO: Check controller board pressure circuitry (See 5.7.9)
   Check pressure transducer and connections (See 5.7.9.6)

6. Perform pressure hold and Kepner Valve tests (See 5.7.1Ø). Do they both pass? If YES, go to next step.
   If NO: Check for leaking Kepner Valve (See 5.7.1Ø)
   Check for leaking air/water solenoid valve (See 5.7.1Ø)
   Check leaking SF housing and cap (See 5.7.1Ø)
   Check for leaking CK6 in air manifold (See 5.7.18)
   Check for leaking pressure transducer (See 5.7.1Ø)
   Check for any other air system leaks (See 9.14.4)
   Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of the set.

7. Call STERIS for additional help after replacing the sterile water filter and re-testing.

STERILE FILTER MEMBRANE TEST FAILED

FAILURE WITH NUMBERS OCCURS IF:

- Pressure drops by more than the value of FF during the 5 minutes pressure hold time period.

USER CORRECTIVE ACTIONS:

- Replace sterile water filter

MOST PROBABLE CAUSES:

- Defective sterile water filter
- Leaking Kepner Valve
- Leaking air/water solenoid valve
- Leaking SF housing or cap
- Leaking CK6 check valve in air manifold
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

133.20 91.10 200.78

DIAGNOSTIC CYCLE

STERILE FILTER MEMBRANE TEST
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

STERILE FILTER MEMBRANE TEST FAILED

1. Verify that all user corrective actions have been taken.

2. Does failure occur without numbers? If NO, go to step 5.
   If YES: Perform pressure hold test (See 5.7.1Ø)

3. Does SF housing get up to pressure? If YES, go to next step.
   If NO: Check for leaking inflatable seal (See 5.7.3)
   Check air compressor output (See 5.7.4) and SOL8
   Check for leaking Kepner Valve (See 5.7.1Ø)
   Check for leaking air/water solenoid valve (See 5.7.1Ø.1)
   Check for leaking SF housing and cap (See 5.7.1Ø)
   Check for leaking CK6 in air manifold (See 5.7.18)
   Check for leaking pressure transducer (See 5.7.1Ø.1)
   Check for any other air system leaks (See 9.14.4)

4. Is reading in X1Ø mode < 7Ø or > 25Ø counts? If NO, go to step 7.
   If YES: Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of set

5. Is the difference between the first and second numbers within one (1) count of FF valve? If YES, go to next step.
   If NO: Check controller board pressure circuitry (See 5.7.9)
   Check pressure transducer and connections (See 5.7.9.6)

6. Perform pressure hold and Kepner Valve tests (See 5.7.1Ø). Do they both pass? If YES, go to next step.
   If NO: Check for leaking Kepner Valve (See 5.7.1Ø)
   Check for leaking air/water solenoid valve (See 5.7.1Ø)
   Check leaking SF housing and cap (See 5.7.1Ø)
   Check for leaking CK6 in air manifold (See 5.7.18)
   Check for leaking pressure transducer (See 5.7.1Ø)
   Check for any other air system leaks (See 9.14.4)
   Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of the set.

7. Call STERIS for additional help after replacing the sterile water filter and re-testing.

DRAIN CHECK FAULT

FAILURE OCCURS IF:

- Pressure remaining after exhausting the sterile filter housing < 1Ø or > 3Ø counts

USER CORRECTIVE ACTIONS:

- (NONE)

MOST PROBABLE CAUSES:

- Defective drain check valve
- Defective air/water solenoid valve

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

DRAIN CHECK FAULT 3.00

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 961

P/N 612Ø19

DRAIN CHECK FAULT

1. Is reading less than 1Ø counts? If NO, go to next step.
   If YES: Check for leaking drain check valve (See 5.7.8)
   Check for leak in line from air/water solenoid valve to drain block
   Check for leaking SF housing and cap (See 5.7.1Ø)
   Check for leaking pressure transducer (See 5.7.1Ø)
   Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of the set

2. Is reading more than 3Ø counts? If NO, go to next step.
   If YES: Check for sticking air/water solenoid valve (See 5.7.8)
   Check for sticking drain check valve (See 5.7.8)
   Check for clogged Ø.Ø3Ø" orifice in drain block
   Check for obstruction in line air/water solenoid valve exhaust port
   Check for obstruction in line from air/water solenoid valve to drain block
   Check for clogged metal filter in SFH
   Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place of the set.

3. Call STERIS for additional help.

AMBIENT TEMPERATURE FAULT

<u>FAILURE OCCURS IF:</u>

- Room temp sensor reads > 5Ø°C or < 13°C

<u>USER CORRECTIVE ACTIONS:</u>

- Check that room temperature is within Processor operating specifications

<u>MOST PROBABLE CAUSES:</u>

- Defective controller board
- Defective cooling fan for electronics enclosure
- Clogged cooling fan screen

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

AMBIENT TEMP FAULT 51.00

========================

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

========================

OPERATOR ID:______________
SERIAL # 100004
CYCLE COUNT: 47

AMBIENT TEMPERATURE FAULT

1. Is room temperature actually warmer than 5Ø°C or colder than 13°C?
   If NO, go to next step.
   If YES: Rectify the situation and re-test.

2. Is cooling fan for electronics enclosure running? If YES, go to next step.
   If NO: Check cooling fan and wiring
   Verify that controller board has not been damaged
   (See 5.7.9)

3. Is the cooling fan screen blocked? If NO, go to next step.
   If YES: Clean cooling fan and screen
   Verify that controller board has not been damaged
   (See 5.7.9)

4. Substitute controller board and re-test.

5. Call STERIS for additional help.

H.P. PUMP FAULT

FAILURE OCCURS IF:
- HP pump does not produce sufficient flow to raise pressure enough to close LS6

USER CORRECTIVE ACTIONS:
- Verify devices are not installed
- Verify fluid port adapter installed on Directed Flow/Covered Flex

MOST PROBABLE CAUSES:
- Defective HP pump
- Defective LS6 pressure switch
- Kinked H.P. tubing on tray
- Solid state relay

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

H.P. PUMP FAULT 78.00

DIAGNOSTIC CYCLE

SYSTEM DIAGNOSTIC TESTS
FAILED

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 87

H.P. PUMP FAULT

1. Is printout reading < 5? If NO, go to next step.

   If YES: Check LS6 and wiring for failure indicating a closed switch (See 5.7.2Ø)

   NOTE: Voltage across LS6 should read near ≤ closed and about 5 VDC open.0

   Check that controller board is reading LS6 condition properly (See 5.7.2Ø)

   Check that HP tubing in tray is not restricted

   Check for sticking air inlet check valve (See 5.7.7)

   Check that sterile air filter is not clogged

2. Is printout reading > 5? If NO, go to next step.

   If YES: Check HP pump for a flow rate of at least 8ØØ ml/min

   Check that HP pump operates reliably each time it is started (See 5.7.2Ø)

   Check LS6 and wiring for failure indicating an open switch (See 5.7.2Ø)

   NOTE: LS6 should read≤5mvDC closed..... and about 5 VDC open

   Check that controller board is reading LS6 condition properly (See 5.7.2Ø)

3. Call STERIS for additional help.

DIAGNOSTIC CYCLE CANCELED

OCCURS IF:

- DIAGNOSTIC Cycle is Canceled

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

DIAGNOSTIC CYCLE
CANCELLED

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 1837

SUCCESSFUL DIAGNOSTIC CYCLE

OCCURS IF:

- DIAGNOSTIC Cycle is successful

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

DIAGNOSTIC CYCLE

STERILE FILTER MEMBRANE TEST
PASSED

SYSTEM DIAGNOSTIC TESTS
PASSED

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 945

<u>**MODELS 9ØA1 AND 9ØA2**</u>

STERILE PROCESSING CYCLE

FIRMWARE
P/N 3ØØØ91
REV A

P/N 612Ø19

FILL PROBLEM

FAILURE OCCURS IF:
- Fill time > 5 minutes or < 25 seconds

USER CORRECTIVE ACTIONS:
- Check for water supply turned off
- Check for kinked inlet & drain hoses
- Check for clogged prefilter(s)

MOST PROBABLE CAUSES:
- Drain pinch valve not closing
- Air system did not reach pressure
- LS2 (seal pressure switch) defective
- Fill SOL 7) not working
- Sticking Kepner Valve
- Defective float switch/connectors
- Leaking float block check valves
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
FILL PROBLEM

TEMP: 47.5 - 48.3 DEG. C
CONCENTRATION: 67
EXPOSURE TIME: 0.0 MIN
FILL TIME: 5.0 MIN
INLET TEMP: 45 DEG. C

OPERATOR ID: ________________
SERIAL # 100004
CYCLE COUNT: 71

ALERT
FILL TIME GREATER THAN
2 MINUTES

CYCLE CANCELLED: 10 : 20
CHAMBER OPENED: 10 : 20

FILL PROBLEM

1. Verify that all user corrective actions have been taken.

2. Does air system get up to pressure? If YES, go to next step.
   If NO: Check for leaking inflatable seal (See 5.7.3)
   Check air compressor (See 5.7.4) SOL8 and LS5
   Is LS2 (seal pressure switch) functioning?
   Check for any other air system leaks (See 9.14.4)

3. Does water enter the processing chamber? If YES, go to next step.
   If NO: Check for clogged prefilters. Installed incorrectly?
   Check SOL7 and controller board output to SOL7 (See 5.7.9.2)
   Check for sticking Kepner Valve
   Check for full float block. (If full, determine and correct cause)

4. Is water substantially flowing out drain hose while attempting to fill? If NO, go to next step.
   If YES: Check that drain pinch valve is closing (See 5.7.15)
   Check SOL5 is shutting off pump flow (See 5.7.9.1)

5. Is water trickling out drain hose while attempting to fill? If NO, go to next step.
   If YES: Check that drain pinch valve is closing (See 5.7.15)
   Check drain check valve (See 5.7.8)

6. Does water leak from lid while attempting to fill or when full? If NO, go to next step.
   If YES: Check for severe back pressure in drain line
   Check float switch (and connections) for proper operation (See 5.7.9.8)
   Check for sticking/leaking check valves in float block (See 5.7.7)
   Check for SOL8 (A/W valve) (See 5.7.1Ø.1)

7. Call STERIS for additional help after checking the following items:
   Check for clogged sterile water filter
   Check for sticking Kepner Valve
   Check for clogged inlet screen

HEAT PROBLEM

FAILURE OCCURS IF:

- Temperature did not reach 5Ø°C during allowed time.
- Time = 3 x TW in seconds.
- TW = (5Ø-1st 15 seconds of input water= average temp) x 6Ø. If TW < 12Ø the TW = 12Ø.

USER CORRECTIVE ACTIONS:

- Check water temperature if too low or if it varies widely.

MOST PROBABLE CAUSES:

- Inlet water temperature
- Defective controller board
- Open SSR #1
- Open heater element
- Defective thermocouple
- Defective/tripped thermal cutout

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ______________

REMARKS: ______________

WARNING
STERILIZATION NOT COMPLETE
HEAT PROBLEM

TEMP: 42.4 - 42.5 DEG. C
CONCENTRATION: 118
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 43 DEG. C

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 9545

CYCLE CANCELLED: 10 : 21
CHAMBER OPENED: 10 : 22

HEAT PROBLEM

1. Verify that all user corrective actions have been taken.

2. Is water temperature OK? If YES, go to next step.
   If NO: Correct water temperature
   Check to see if it varies widely (run for 5 minutes)

3. Are voltage drops correct? If YES, go to next step. (After initial fill, does the voltage drop from approximately 115 vac to 1 vac on CN3 Pin 1?)
   If NO: Check output voltage on controller board (See 5.7.9.1)
   Check voltage at SSR #1 (See 5.7.9.1)
   Check voltage across heater element

4. Call STERIS for additional help after checking the following items:
   Check heater element continuity (between 1Ø-12 OHMS)
   Check for defective thermocouple (See 5.7.9.3)
   Check if thermal cutout is tripped

TEMPERATURE UNDER 5Ø°C

<u>FAILURE OCCURS IF:</u>

- Temperature < 5Ø°C during 12 minutes of exposure time

<u>USER CORRECTIVE ACTIONS:</u>

- Check water temperature if too low or if it varies widely

<u>MOST PROBABLE CAUSES:</u>

- Inlet water temperature too low
- Defective thermocouple
- Defective controller board
- Defective SSR #1
- Defective heater element
- Tripped thermal cutout switch
- Leaking inlet water valve (with high water pressure)

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
TEMP. UNDER 50 DEG.

TEMP: 49.1 - 52.4 DEG. C
CONCENTRATION: 206
EXPOSURE TIME: 1.3 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 42 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 965

CYCLE CANCELLED: 10 : 24
CHAMBER OPENED: 10 : 24

TEMPERATURE UNDER 5Ø°C

1. Verify that all user corrective actions have been taken.

2. Is water temperature pressure OK? If YES, go to next step.
   If NO: Correct water temperature
   Make sure water pressure is between 4Ø-5Ø psi
   Make sure inlet valve is not stuck open (allowing water to enter)

3. Are voltage drops correct? If YES, go to next step. (After initial fill, does the voltage drop from approximately 115 vac to 1 vac on (CN3 pin 1)
   If NO: Check output voltage on controller board (See 5.7.9.1)
   Check voltage at SSR #1 (See 5.7.9.1)
   Check voltage across heater element

4. Call STERIS for additional help after checking the following items:
   Check for defective thermocouple (See 5.7.9.3)
   Check if thermal cutout is tripped

CONCENTRATION LOW

FAILURE OCCURS IF:

- Concentration is less than 175 during 12 minutes of exposure time

USER CORRECTIVE ACTIONS:

- Check for STERIS 2Ø in chamber
- Powders fully emptied from cup
- Pour vinegar into QD posts to clean conductivity probes
- Any liquid left in STERIS 2Ø cup - is aspirator working correctly?

MOST PROBABLE CAUSES:

- Shorted thermocouple (TC1-3)
- Common return line (wire #7) to chassis ground short
- Defective controller board
- Defective/coated conductivity probes
- Leaking inlet water valve

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
CONCENTRATION LOW

TEMP: 51.5 - 52.3 DEG. C
CONCENTRATION: 70
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 42 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 949

CYCLE CANCELLED: 11 : 19
CHAMBER OPENED: 11 : 25

CONCENTRATION LOW

1. Verify that all user corrective actions have been taken.

2. Verify that STERIS 2Ø cup completely empties. If YES, go to next step.
   If NO: Powders fully emptied from cup (Check expiration date of STERIS 2Ø)
   Is aspirator functioning correctly? (In addition to hard water, can cause corroded conductivity probes). Use vinegar to clean conductivity probes.

3. Measure resistance from common return line (wire #7) to chassis. Is resistance > 5Øk hms? If YES, go to next step.
   If NO: Check for crimped wire in wiring harness
   Check for shorted (to casing) thermocouple (See 9.15)
   Substitute controller board and re-test
   NOTE: If two-board set is installed, use P/N 3ØØØ76 board in place

4. Call STERIS for additional help after checking the following items:
   Check for defective controller board (Concentration circuitry)
   Check conductivity probes for cleanliness (See 5.7.9)
   Check integrity of wiring from conductivity probes to CN9 (See 5.7.9.4)
   Check for shorted (to casing) thermocouple (See 9.15)
   Check heater element for perforation or short to casing
   Check for leaking inlet water valve

CHAMBER LEVEL LOW

FAILURE OCCURS IF:
- Loss of fluid during 12 minutes of exposure time. Float block indicates - not full.

USER CORRECTIVE ACTIONS:
- Excessive water in drip pan? Look for leaking tray, lid, or QD's.
- Is inlet water > 48°C?
- Is drain hose routed correctly?

MOST PROBABLE CAUSES:
- Leaking lid (lid adjustment)
- Leaking adapter tray
- Leaking CK1 (air inlet) valve
- High pressure pump sucking air
- Float block not functioning
- Leaking drain pinch valve
- Intermittent drain pinch valve solenoid

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
CHAMBER LEVEL LOW

TEMP: 51.5 - 55.3 DEG. C
CONCENTRATION: 205
EXPOSURE TIME: 3.5 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 43 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 950

CYCLE CANCELLED: 10 : 27
CHAMBER OPENED: 10 : 30

CHAMBER LEVEL LOW

1. Verify that all user corrective actions have been taken.

2. Is water leaking from lid? If NO, go to next step.
   If YES: Check for leaking header block, cracked window
   Is upper seal good?
   Check for leaking drain tube assembly
   Check for correct lid adjustment

3. Is water in drip pan? If NO, go to next step.
   If YES: Check for leaking adapter tray
   Are QD's and o-rings OK?

4. Is water/corrosion in shroud? If NO, go to next step.
   If YES: Check CK1 (air inlet) leaking during cycle
   Check for leaking hoses/components during cycle

5. Is water draining out of drain during cycle? If NO, go to next step.
   If YES: Verify drain pinch sleeve is not leaking
   Check for intermittent drain pinch sleeve solenoid (SOL 4)
   Check for leaking drain check valve (See 5.7.8)
   Check for drain hose routing

6. Are a lot of bubbles rising in chamber during cycle? If NO, go to next step.
   If YES: Check for high pressure pump sucking air
   Check for ripped drain/circ pinch sleeve
   Check for leaking component

7. Call STERIS for additional help after checking the following items:
   Check for defective float block, leaking, wiring
   CK2 & 3 in float block could be defective
   Inlet water temperature greater than 48°C

HEATER PROBLEM

FAILURE OCCURS IF:

- Temperature difference of 7°C between 2 chamber temperature sensors. (TC #1 - TC #2 > 7°C).

USER CORRECTIVE ACTIONS:

- Check for lint or debris in drain screen
- Check to see if water is circulating
- Check for varying inlet temperature

MOST PROBABLE CAUSES:

- Circulation pump not operating
- Defective thermocouple (TC1-2)
- Defective controller board
- Defective SSR #4
- Leaking circ pinch sleeve
- Intermittent circ valve solenoid

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
HEATER PROBLEM

TEMP: 42.0 - 49.1 DEG. C
CONCENTRATION: 64
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 42 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 79

CYCLE CANCELLED: 10 : 18
CHAMBER OPENED: 10 : 24

HEATER PROBLEM

1. Verify that all user corrective actions have been taken.

2. Is water circulating in chamber? If YES, go to next step.
   If NO: Check SSR #1
   Check to see if circulation pump is operating
   Check for signal at SSR 4 (See 5.7.9.2)
   Check wiring to circulation pump

3. Call STERIS for additional help after checking the following items:
   Check for varying inlet water temperature
   Check for defective thermocouple (TC1-2) (See 5.7.9.3)
   Check controller board TC1 & TC2 channels (See 5.7.9)
   Check the circ pinch sleeve for leaks
   Check the circ pinch valve solenoid (could be intermittent)

CHAMBER OPEN

<u>FAILURE OCCURS IF:</u>

- Latch open is detected

<u>USER CORRECTIVE ACTIONS:</u>

- Make sure lid is closed and rerun cycle

<u>MOST PROBABLE CAUSES:</u>

- Lid was opened and re-closed very quickly after cycle start.
- Defective lid switch
- Latch flag out of adjustment
- Faulty connections or wiring
- PCBd sensor circuitry defective

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
CHAMBER OPEN

TEMP: 44.0 - 44.0 DEG. C
CONCENTRATION: 65
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.8 MIN
INLET TEMP: 43 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 952

CYCLE CANCELLED: 10 : 18
CHAMBER OPENED: 10 : 20

CHAMBER OPEN

1. Verify that all user corrective actions have been taken.

2. Is the lid latch flag adjusted correctly? If YES, go to next step.
   If NO: Adjust lid latch flag correctly (See 9.2)
   Check latch sensor mechanism (See 5.7.9.8)

3. Call STERIS for additional help after checking the following items:
   Check lid switch operating correctly (See 5.7.9.8)
   Check all connections and wiring to lid latch sensor mechanism
   Check controller board voltages (See 5.7.9.8)

TEMPERATURE OVER 6Ø°C

FAILURE OCCURS IF:

- Temperature of greater than 6Ø°C detected in chamber

USER CORRECTIVE ACTIONS:

- Check for lint or debris in chamber
- Check water temperature too hot

MOST PROBABLE CAUSES:

- Fan not running
- Circulation pump not operating
- Defective thermocouple (TC1-2)
- Defective heater element
- Defective SSR #1
- Circulation pinch sleeve leaking
- Defective controller board

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ____________

REMARKS: ____________

WARNING
STERILIZATION NOT COMPLETE
TEMP OVER 60 DEG.

TEMP: 40.4 - 63.8 DEG. C
CONCENTRATION: 65
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.1 MIN
INLET TEMP: 42 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 963

CYCLE CANCELLED: 10 : 17
CHAMBER OPENED: 10 : 19

TEMPERATURE OVER 6Ø°C

1. Verify that all user corrective actions have been taken.

2. Is water entering chamber? If YES, go to next step.
   If NO: Determine why water is not entering unit (reference fill problem)

3. Is water circulating in chamber? If YES, go to next step.
   If NO: Check to see if circulation pump is operating
   Check SSR #1
   Check for signal at SSR #4 (See 5.7.9.3)
   Check wiring to circulation pump

4. Call STERIS for additional help after checking the following items:
   Check to see if fan is running or if controller board feels exceptionally hot
   Check for varying inlet water temperature
   Check for defective thermocouple (TC1-2) (See 5.7.9.4)
   Check for controller board TC1-2 channels (See 5.7.9.4)
   Check circ pinch sleeve for leaks
   Check circ pinch valve solenoid (intermittent)
   Check to see if heater element is always on (SSR #1)

POWER FAILURE

FAILURE OCCURS IF:

- Loss of input power during a cycle
- Non-recoverable and all internal data is lost

USER CORRECTIVE ACTIONS:

- Check to see if AC power to unit is on
- Determine if GFCI tripped

MOST PROBABLE CAUSES:

- Internal fluid leak
- Shorted heater element
- Shorted component (ground fault)
- Wiring shorted to ground

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ____________

REMARKS: ____________

WARNING
STERILIZATION NOT COMPLETE
POWER FAILURE

POWER FAILURE

1. Verify that all user corrective actions have been taken.

2. Is there a fluid leak? If NO, go to next step.
   If YES: Determine cause of leak - most probable:
   - Circulation pump
   - Lid/window assembly
   - HP pump
   - Cracked water line
   - Cracked adapter tray

3. Call STERIS for additional help after checking the following items:
   Disconnect AC component, one at a time, until component causing tripping is identified - most probable:
   - Heater element shorted
   - Air compressor w/SSR #3
   - Circ pump w/SSR #4
   - HP pump w/LS2 and SSR #2

TEMPERATURE PROBLEM

<u>FAILURE OCCURS IF:</u>

- Internal temperature sensor senses < 13°C or >5Ø°C on PCBd

<u>USER CORRECTIVE ACTIONS:</u>

- Determine temperature of room:
  - too cold < 13°C
  - too hot > 5Ø°C (122°F)

<u>MOST PROBABLE CAUSES:</u>

- Fan not running or clogged air flow
- Room temperature sensor defective

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
TEMP. PROBLEM

TEMP: 38.6 - 39.2 DEG. C
CONCENTRATION: 72
EXPOSURE TIME: 0.0 MIN
FILL TIME: ______
INLET TEMP: ______

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 79

CYCLE CANCELLED: 10 : 16
CHAMBER OPENED: 10 : 18

TEMPERATURE PROBLEM

1. Verify that all user corrective actions have been taken.

2. Call STERIS for additional help after checking the following items:
   Check room temperature (< 13°C or > 5Ø°C)
   Check if fan is running or if air flow is restricted
   Check if room temperature sensor is sensing correct temperature (See 5.7.9.4)

HP PUMP FAILURE

FAILURE OCCURS IF:

- High pressure pump has failed or functions, but does not produce sufficient flow for system detection

USER CORRECTIVE ACTIONS:

- Check for proper scope hook-ups

MOST PROBABLE CAUSES:

- Defective HP pump
- Defective pressure switch (LS6)
- Defective controller board
- Kinked H.P. tubing on tray

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ______________

REMARKS: ______________

WARNING
STERILIZATION NOT COMPLETE
HP PUMP FAILURE

TEMP: 51.6 - 55.3 DEG. C
CONCENTRATION: 206
EXPOSURE TIME: 12.0 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 43 DEG. C

OPERATOR ID: ______________
SERIAL # 100004
CYCLE COUNT: 953

CYCLE CANCELLED: 10 : 40
CHAMBER OPENED: 10 : 41

HP PUMP FAILURE

1. Did Processor pass DIAGNOSTICS? If YES, go to next step.
   If NO: Reference HP pump fault (See 5.2.3Ø)

2. Is pump measured flow rate of at least 8ØØ ml? If YES, go to next step.
   If NO: Replace marginal pump

3. Call STERIS for additional help after checking the following items:
   Check that HP pump operates reliably each time it is started (See 5.7.2Ø)
   Check LS6 and wiring for failure indicating an open switch (See 5.7.2Ø)
   NOTE: Voltage across LS6 should read ≤5m VDC closed and about 5 VDC open. Check that controller board is reading LS6 condition properly(See5.7.2Ø)

STERILE PROCESSING CYCLE CANCELED BY OPERATOR

<u>OCCURS IF:</u>

- Operator cancels cycle

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

WARNING
STERILIZATION NOT COMPLETE
OPERATOR CANCELLED

TEMP: 38.7 - 39.2 DEG. C
CONCENTRATION: 60
EXPOSURE TIME: 0.0 MIN
FILL TIME: 0.0 MIN
INLET TEMP: 37 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 948

CYCLE CANCELLED: 10 : 21
CHAMBER OPENED: 10 : 25

STERILE PROCESSING CYCLE COMPLETED

DATE: Current date

TIME: Time cycle started

LOAD ID: Your specific identification number

REMARKS: Operator notes

TEMP: This documents that the temperature was attained and maintained for the exposure time

CONCENTRATION: Checks to insure that cup of STERIS 2Ø has been added with each cycle

EXPOSURE TIME: Should always be 12 minutes

CYCLE COMPLETED: Time the cycle completed

CHAMBER OPENED: Time the lid seal was released

OPERATOR ID: Space for operators initials

SERIAL #: Serial # of the SYSTEM 1 Processor

CYCLE COUNT: Current cycle count. The cycle count is always sequentially numbered. This count does not increase on DIAGNOSTIC cycles

FILL TIME: Time of longest fill should be about 1 minute. More than 2 minutes yields fill time alert,
more than 5 minutes generates fill time error

INLET TEMP: Temperature of water in chamber prior
to heating

STERIS

SYSTEM 1

DATE: 9 / 1 / 95
TIME: 10 : 15

LOAD ID: ________________

REMARKS: ________________

____

____

____

____

____

TEMP: 51.4 - 55.4 DEG. C
CONCENTRATION: 206
EXPOSURE TIME: 12.0 MIN
FILL TIME: 0.9 MIN
INLET TEMP: 44 DEG. C

OPERATOR ID: ____________
SERIAL # 100004
CYCLE COUNT: 946

CYCLE COMPLETE: 10 : 52
CHAMBER OPENED: 10 : 53

P/N 612Ø19

CONTROL PANEL INDICATORS

1. Are all indicators off? If NO, go to next step.
   If YES: Check if fan is running
   Check 5 VDC power supply (See 5.7.16)
   Check controller board connections
   Check circuit breaker/GFCI tripped
   Check AC input
   Reset STERIS SYSTEM 1!
   Check Membrane Panel

2. Are all indicators on? If NO, go to next step.
   If YES: Check 5 VDC power supply (See 5.7.16)
   Check controller board connections
   Check ribbon cable for crimped wiring

3. Is cancel light on only? If NO, go to next step.
   If YES: Check to see if unit is in cancel routine - wait for completion
   Check if cancel light flickers when control panel is opened and closed-could be crimped ribbon cable
   Check Membrane Panel

4. Is cancel, DIAGNOSTIC, and complete lights on only? If NO, go to next step.
   If YES: Check if unit is in time set mode (See 4.4)
   Check if lights flicker when control panel is opened and closed-could be crimped ribbon cable

5. Call STERIS for additional help after checking following items:
   Check ribbon cable for crimped wiring
   Check Membrane Panel for defectiveness
   Check printer board for burnt OVF leads
   Check controller board for correct connections

PROCESSOR LOCKED UP

1. Is lid closed? If YES, go to next step.
   If NO: Close lid

2. Make sure lid switch and latch flag is adjusted correctly (See 9.2)

3. Is power to unit good and ready light lit? If YES, go to next step.
   If NO:
   - Check AC and GFCI input power
   - Check if unit is in cancel routine - allow routine to finish
   - Check if unit is in time set mode (See 4.4)
   - Check control panel indicators (Reference 5.4.1)
   - Reset Processor: power off, then on after 15 seconds

4. Call STERIS for additional help after checking the following items:
   - Reset Processor: power off, then on after 15 seconds
   - Check 5 VDC power supply (See 5.7.16)
   - Perform button test (See 5.7.6.1)
   - Check connections on controller board (CN1 on PCBd)
   - Check printer test (See 5.7.2)
   - Check Membrane Panel continuity (does ready light blink when buttons are pressed?)

PRINTER PROBLEMS

1. Does printer print OK? If YES, go to next step.
   If NO:
   - Check if paper is loaded correctly
   - Run print test (Turn off unit, hold down paper feed, then turn unit back on) printer should print test
   - Check connections to printer
   - Check paper feed button
   - Look for paper jam
   - Is SF HSG cap interfering with paper roll?

2. Does printer quit during cycle or skip lines or print garbage (????!??)? If NO, go to next step.
   If YES:
   - Check to see if AC input is a dedicated line
   - Test all components causing electronic noise. Run print noise test (See 5.7.2)

   Probable components to cause noise:

   1) HP pump
   2) LS2 (seal pressure switch)
   3) SSR2
   4) Air compressor
   5) Other SSR's
   6) Heater element
   7) Other solenoids

   - Check power supply connections
   - Check controller board and connections
   - Check wiring for short

MISCELLANEOUS
PRINTER PROBLEMS

The printer will shut itself down if jammed. To restore operation, remove cause of jam and reset the printer by unplugging the Processor from the wall outlet for at least fifteen (15) seconds and then restoring power.

Since the Printer uses thermal paper, incorrectly installed paper will prevent printing from occurring (Refer to diagram 5C below). The outside surface (which will mark when scratched) must contact the print head.

Failure to feed (over-printing) may be caused by the sterile filter housing cap not being completely tightened and interfering with a full roll of paper.

An 8 gang and a 6 gang dip switch located on the printer board must both be set for proper operation of the printer. Print contrast can be changed with VR 1Ø1. (Refer to diagram 5B below)

The printer may be put into a TEST mode by disconnecting AC power and re-applying power while holding down the "paper feed" button. A sample of the printer test printout is illustrated (5A) below.

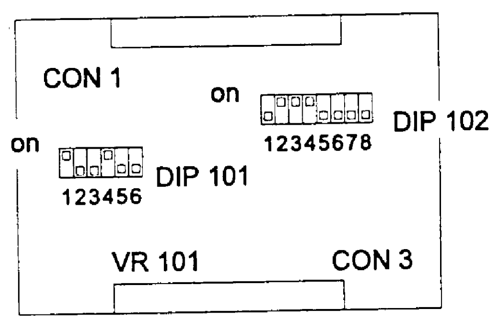


DIAGRAM 5B
DIP SW SETTINGS

DIAGRAM 5A
PRINTER TEST

DIAGRAM 5C
CORRECT PAPER FEED

WATER SPILLS FROM PROCESSOR

1. Is drip pan full of water? If NO, go to next step.
   If YES:
   - Check if adapter tray is cracked and leaking
   - Check lid/window if cracked and leaking
   - Check for leaking drain tube
   - Check for damaged anti-siphon valve (causes water to enter drip pan during draining)
   - Check CK2 and CK3 in float block for sticking or swollen o-rings

2. Is chamber filling? If YES, go to next step.
   If NO:
   - Check for back pressure drain
   - Check float block check valves CK2, CK3
   - Check lid latch wires

3. Call STERIS for additional help after checking the following items:
   - Check CK2, CK3 in float block for sticking or swollen o-rings
   - Check that lid window is adjusted correctly
   - Check upper seal
   - Check if devices are loaded correctly
   - Check if water pressure is > 5Ø psi

5.5 COMMAND DESCRIPTION:

GENERAL:

This procedure describes the general method of communicating with the SYSTEM 1 processor. It gives command syntax words, memory maps, and input / output register location and data - scaling. It is to be used to test and troubleshoot SYSTEM 1 Processor.

CAUTION:

When using this procedure to command the SYSTEM 1 Processor, care must be exercised in typing commands:(1) 15ØØ Watt heating element, (3) line connected AC motors, and (7) 24 vac solenoid valves are controlled by the processor. These may be turned on/off during command typing. Machine damage or personal injury could result from careless errors in command entry. All commands should be double checked prior to entry.

EQUIPMENT REQUIRED:

Serial terminal and communication link P/N 3ØØØ8Ø

PROCEDURE:

1. Plug the Serial hand terminal into the 25 pin type "D" connector on communication link adapter as is necessary with the particular model of SYSTEM 1 Processor. Attach other end of link to Printer Board through 1" diameter access hole in cover of Printer Board (plastic shroud).

2. The system address and memory map.

FFFF - EØØ8	UNUSED
EØØ7 - CØØ3	A/D CONVERTER
CØØ2- CØØØ	PORT U4
BFFF - 8ØØØ	ROM
7FFF - 4ØØ3	UNUSED
4ØØ2 - 4ØØØ	PORT U5
3FFF - 28ØØ	UNUSED
27FF - 2ØØØ	2K BATTERY BACKED UP RAM, CLOCK/CALENDAR
1FFF - ØØØØ	8K RAM

3. To read condition of any address in the system, use the following command: PRINT XBY(XXXXH) ←ENT. XXXX is the desired address in hexadecimal. Note: if a letter (A thru F) is the first digit of the address, then a "Ø" must precede it. The last character of a hexadecimal address must be an "H".

4. To turn a device or devices on or off, use the following format: XBY(YYYYH)=ZZZ. YYYY is the address (HEXADECIMAL) to which the command will be executed. ZZZ is the value (decimal) that is being commanded to the address. Note: if a letter (A through F) is the first digit of the address, then a "Ø" must precede it. Observe caution while outputting commands to the system.

5. A / D CONVERTER ADDRESS: ØEØØØH through ØEØØ7H

Hexadecimal Address	Function	Scaling Factor
ØEØØØH	Thermocouple #1 in drain transition block	1 count =Ø.5°C Ø count =rm tmp
ØEØØ1H	Thermocouple #2 in pressure transition block	1 count =Ø.5°C Ø count =rm tmp
ØEØØ2H	Thermocouple #3 in drain block assembly	1 count =Ø.5°C Ø count =rm tmp
ØEØØ3H	Room temp. sensor on controller PC board	1 count =Ø.5°C Ø count =Ø.Ø°C
ØEØØ4H	Conductivity sensor	1 count =Ø.Ø195 V
ØEØØ5H	Pressure Transducer (Standard mode) Pressure Transducer (High gain mode)	1 count =Ø.39 psig 1 count = Ø.Ø39 psid
ØEØØ6H	+5 VDC power supply	1 count =Ø.Ø195 V
ØEØØ7H	System ground	1 count =Ø.Ø195 V

Examples:

Command	Action
PRINT XBY(ØEØØ3H)	Prints room temp to hand terminal display in counts.
PRINT XBY(ØEØØØH)	Prints temp recorded by thermocouple #1.
PRINT XBY(ØEØØ5H)	Prints pressure reading of transducer in counts. X1Ø mode explained later.

PRINT YB (ØCØØØH), AND 4

6. Port U4 CØØØH - CØØ2H

0 = SWITCH CLOSED
4 = SWITCH OPEN

U4A Address CØØØH, Binary 8 bits

This address indicates the status of the control panel switches. A <u>zero</u> <u>indicates</u> the <u>switch</u> is <u>closed</u>. (or last depressed)

IF BIT #	Ø	is True	Start switch is opened
		is False	Start switch is closed
	1	is True	Cancel switch is open
		is False	Cancel switch is closed
	2	is True	DIAGNOSTICS switch is open
		is False	DIGANOSTICS switch is closed
	3	is True	Unused
		is False	Unused
	4	is True	Filter Selection switch #1 is open
		is False	Filter Selection switch #1 is closed
	5	is True	Filter Selection switch #2 is open
		is False	Filter Selection switch #2 is closed
	6	is True	
		is False	{THESE BITS UNUSED
	7	is True	
		is False	

U4B Address CØØ1H, Binary 8 bits
This address controls the panel indicators. A 1 <u>indicates</u> an <u>indicator</u> is <u>illuminated</u>.

IF BIT #	Ø	is True	Ready indicator is illuminated
		is False	Ready indicator is not illuminated
	1	is True	Complete indicator is illuminated
		is False	Complete indicator is not illuminated
	2	is True	Cancel indicator is illuminated
		is False	Cancel indicator is not illuminated
	3	is True	DIAGNOSTIC indicator is illuminated
		is False	DIAGNOSTIC indicator is not illuminated
	4	is True	LT 1 indicator is illuminated
		is False	LT 1 indicator is not illuminated
	5	is True	LT 2 indicator is illuminated
		is False	LT 2 indicator is not illuminated
	6	is True	LT 3 indicator is illuminated
		is False	LT 3 indicator is not illuminated
	7	is True	LT 4 indicator is illuminated
		is False	LT 4 indicator is not illuminated

Examples:

Command	Action
XBY(ØCØØ1H)=Ø	Turns off all indicators
XBY(ØCØØ1H)=255	Turns on all indicators
XBY(ØCØØ1H)=1	Turns on ready indicator only
XBY(ØCØØ1H)=64	Turns on LT 3 only

7. Port U5 Address 4ØØØH thru 4ØØ2H

U5A Address 4ØØØH, Binary 8 bits

This address indicates the status of the several system monitors.

IF BIT #	Ø	is True is False	Lid indicating open condition
	1 *	is True is False	LS3 indicating a full chamber Normally closed when full - open
	2	is True is False	Indicated pressure sensed by LS6
	3	is True is False	Indicates pressure sensed >4Ø psi
	4	is True is False	Indicates compressor on
	5	is True is False	
	6	is True is False	{THESE BITS UNUSED
	7	is True is False	

To manually acquire the state of a given input, it is necessary to mask out the undesired inputs. After this is done, a value of Ø will indicate false, and a non-zero value will indicate true. Below are examples on how to retrieve data on each input.

Examples:

Command	Interpretation of results
PRINT XBY (4ØØØH) .AND.1	Ø = false = lid closed; 1 = true = lid open
PRINT XBY (4ØØØH) .AND.2	Ø = false = float block not full; 2 = true = float block full
PRINT XBY (4ØØØH) .AND.4	Ø = HP pump pressure sensed; 4 = HP pump pressure not sensed
PRINT XBY (4ØØØH) .AND.8	Ø = false = Xducer pressure > 4Ø psi 8 = true = Xducer pressure < 4Ø psi
PRINT XBY (4ØØØH) .AND.16	Ø = false = compressor not running* 16 = true = compressor is running

*Single board controller only.

U5B Address 4ØØ1H, Binary 8 bits

This address is the control register for most of the outputs from the controller PCBd. A false condition turns on the respective device. **Note: This is a Write Only location**. Any attempt to print a value (PRINT XBY (4ØØØH) from this location will result in ambiguous data being displayed. To read data use I4 and U5B. (See Variable Names Section 5.6)

IF BIT #	Ø	is True	Seal Release solenoid (SOL 2)
		is False	Seal Release solenoid (SOL 2) **ENERGIZED**
	1	is True	Water inlet Fill Valve (SOL 7)
		is False	Water inlet Fill Valve (SOL 7) **ENERGIZED**
	2	is True	Drain Pinch Valve Solenoid (SOL 4)
		is False	Drain Pinch Valve Solenoid (SOL 4) **ENERGIZED**
	3	is True	Circulation Pinch Valve Solenoid (SOL 3)
		is False	Circulation Pinch Valve Solenoid (SOL 3) **ENERGIZED**
	4	is True	Dump Valve (SOL 5)
		is False	Dump Valve (SOL 5) **ENERGIZED**
	5	is True	Air/Water Solenoid Valve (SOL 8)
		is False	Air/Water Solenoid Valve (SOL 8) **ENERGIZED**
	6	is True	High Pressure Pump (P2)
		is False	High Pressure Pump (P2) **ENERGIZED**
	7	is True	Circulation Pump (P1)
		is False	Circulation Pump (P1) **ENERGIZED**

Examples:

Command	(Binary)	Action
XBY (4ØØ1H) = 255	11111111	all above devices OFF
XBY (4ØØ1H) = 254	1111111Ø	SOL 2 ON only
XBY (4ØØ1H) = 249	11111ØØ1	SOL7 and SOL4 ON only
XBY (4ØØ1H) = 253	111111Ø1	SOL7 ON only
XBY (4ØØ1H) = 119	Ø111Ø111	SOL3 and P1 ON only
XBY (4ØØ1H) = 243	1111ØØ11	SOL3 and SOL4 ON only

NOTE: SOL4, 5, 7, and P2 require LS2 (pressure safety switch) to be closed in order to turn on when commanded by (4ØØ1H) address.

U5C Address 4ØØ2H, Binary 8 bits

This address controls the air compressor (COMP), the heater (HTR), and the DIAGNOSTIC test modes. **Caution must be exercised when programming this address. Mistakes involving the 15ØØ WATT heater can cause personnel hazards and/or Processor damage.**

IF BIT #	Ø	is True	Compressor controlled from PT1
		is False	*Compressor controlled from LS5**
	1	is True	Compressor Enabled
		is False	*Compressor Disabled**
	2	is True	*PT1 is in the Standard Mode**
		is False	PT1 is in the Pressure Test Mode (Hi-Gain Mode)
	3	is True	*Conductivity Test Mode Disabled**
		is False	Conductivity Test Mode Enabled
	4	is True	*Heater Disabled**
		is False	Heater Enabled
	5	is True	
		is False	
	6	is True	{THESE BITS UNUSED
		is False	
	7	is True	
		is False	

* indicates the normal state

Given: XBY (4ØØ2H) = ZZ, see below: (where ZZ is the decimal value)

Condition	Decimal	Binary
All off	28	111ØØ
Compressor on and controlled by LS5	3Ø	1111Ø
Compressor on and controlled by PT1*	31	11111
Pressure Test mode	24	11ØØØ
Conductivity Test mode	2Ø	1Ø1ØØ
HEATER ON !!!	12	Ø11ØØ

* Compressor is controlled by PT1 during Sterile Membrane Filter Test. SOL8 (pressure test solenoid) which opens flow path from PT1 to air manifold, is also energized during the stabilization phase of the SMFT.

Examples:

Command	(Binary)	Action
XBY(4ØØ2H)=28	111ØØ	all above devices OFF
XBY(4ØØ2H)=3Ø	1111Ø	Comp on (control by LS5)
XBY(4ØØ2H)=31	11111	Comp on (control to PT1)
XBY(4ØØ2H)=14	Ø111Ø	Comp on (control by LS5) and HEATER ON !!!

Note: Any value of ZZ less than 16 will TURN ON THE HEATER !!!

The following program can be used to constantly read out the condition of address buses. The address buses that can be read using this program are:

A/D Converter Address Buses:	ØEØØØH through ØEØØ7H.
Port U4A Address:	CØØØH.
Port U5A Address:	4ØØØH.

To enter the program type:

- [CTRL]+C
- RAM <CR>
- 1Ø A = **XXXX** <CR> (**XXXX** = The address bus to be read)
- 2Ø PRINT A, <CR>
- 3Ø FOR T=1 TO 1ØØ:NEXT T <CR>
- 4Ø GOTO 1Ø <CR>
- RUN <CR>

To end the program, type [CTRL]+C.

Example:

To read out the conductivity sensor (concentration monitor probes):

[CTRL]+C

RAM

```
1Ø A=XBY(ØEØØ4H)          <CR>
2Ø PRINT A,               <CR>
3Ø FOR T=1TO1ØØ:NEXT T    <CR>
4Ø GOTO1Ø                 <CR>
RUN                       <CR>
```

The value of the conductivity sensor address bus will read out constantly across the screen of the hand terminal. Interrupt the reading by pressing [CTRL]+C.

5.6 SETTING THE SERIAL NUMBER/, CYCLE COUNT, DATE, AND TIME:

GENERAL:

This Procedure describes the method for entering the:

Serial Number (S/N)
Cycle Count (CC)
DATE
TIME

All four (4) of these parameters will need to be set should the controller PCBd need replacement. NOTE: ←ENT indicates use of the ENTER key.

CAUTION:

When using this procedure to command the STERIS SYSTEM 1 Processor, care must be exercised in typing commands. Line voltage vac motors, 24 vac solenoid valves, and a 15ØØ WATT heater can be turned on and off. Machine damage or personal injury could result from careless errors in command entry. All commands should be double checked prior to entry.

Required Equipment:

Serial terminal and communication link P/N 3ØØØ8Ø

PROCEDURE:

1. Plug the serial terminal into the 25 pin Type "D" connector on communication link adapter as is necessary with the particular model of the STERIS SYSTEM 1 Processor. Attach other end of link to printer board through 1" diameter access hole in cover of printer board (plastic shroud).

2. Type: CTRL C in order to gain control of the computer in the SYSTEM 1 Processor. This is the command mode, commands to the SYSTEM 1 Processor can now be entered through the operation of the hand terminal, and the responses from the Processor will be displayed on the hand terminal display.

3. To set the S/N type:

   PUSH XXXX ←ENT
   ST@ 27E5H ←ENT

   where "XXXX" = serial number

4. To set the CC type:

   PUSH XXXX ←ENT
   ST@ 27EBH ←ENT

   where "XXXX" = cycle count

To set the date, type:

XBY(27F8H)=128	←ENT	stops clock
XBY(27FEH)=mmH	←ENT	sets month
XBY(27FDH)=ddH	←ENT	sets day
XBY(27FFH)=yyH	←ENT	sets year
XBY(27F8H)=Ø	←ENT	starts clock

where "mm" = month, "dd" = day, "yy" = year

6. To set the time, type: Military Time

XBY(27F8H)=128	←ENT	stops clock
XBY(27FAH)=mmH	←ENT	sets minutes
XBY(27FBH)=hhH	←ENT	sets hours
XBY(27F8H)=Ø	←ENT	starts clock

where "mm" = minutes, "hh" = hours

7. To determine the present software revision level in the STERIS SYSTEM 1 Processor, type:

CAN PRINT STRINGS

PRINT CHR (XBY(802AH)) ←ENT

?#FP, FZ, CF, CE

<u>VARIABLE NAMES</u>: ?TP - QUESTION VARIABLE ?# XY to printer

WHAT ARE THEY?

Only held in memory until powered down

During the running of the SYSTEM 1 Processor, the Processor measures and stores certain values into memory. These can be accessed via the hand terminal to assist in troubleshooting.

The variables, names and purpose are:

<u>VARIABLE</u>	<u>NAME</u>	<u>PURPOSE</u>
TMP(Ø)	Temperature @ TC1	direct readout TC1
TMP(1)	Temperature @ TC2	direct readout TC2
TMP(2)	Temperature @ TC3	direct readout TC3

(continued)

VARIABLE	NAME	PURPOSE
FZ	Fill Zero	zero pressure with the chamber full
FP	Fill Pressure	pressure across filter during fill
CZ	Circulation Zero	zero pressure with chamber full circ pump on and circ pinch valve closed
CP	Circulation Pressure	pressure with the chamber full and the circ pump on
BT	Begin Temperature	starting temperature of heat rate test
TRY	Try Number	# of times heat rate test retried.
CD	Conductivity Reading	meas. prior to 1ØK ohm in across probes
CL	Conductivity Calculated	calculated limit for conductivity test
PS	Pressure Drop	press. drop across SFM in counts during SFMT
FT	Fill Time	time to fill chamber during initial fill. (sterile cycle only)
I4	Binary Integer	contains binary data to be written to write only location 4ØØ1H (port U5B)

(continued)

VARIABLE	NAME	PURPOSE
U5B	Port U5B Binary Data	contains binary data that was written to write only location 4ØØ1H (Port U5B). This variable is updated during normal program execution immediately after writing the data to location 4ØØ1H. When the program is interrupted <CTRL "C"> the user can read variables I4 & U5B. If they are the same value, output port U5B will also contain this data. If they are not the same value, simply continue the program using the "CONT" command and interrupt the program again. The values should now be equal.
FF	Filter Failure Threshold	Level in counts above which result in a SFMT failure. Level is dependent on the dip switch setting. For (A15Ø5) = 42 counts For I (A15Ø2) = 38 counts
HP	High Pressure	The number of times the HP switch (LS6) was read and there was no pressure. If HP > 7Ø, the pressure switch never indicated any pressure.
HPC	High Pressure Counts	The number of times the HP switch (LS6) was read during the test.
HPF	High Pressure Failure	Indicates the test results: Ø = HP test failed "pump off" 1 = HP test failed "pump on" 2 = HP test passed

HOW YOU USE THE VARIABLES:

Except where noted, all variables apply to the DIAGNOSTIC cycle only.

After running the DIAGNOSTICS: enter PRINT FZ, CP ←ENT into the hand terminal. This syntax will print the Fill Zero (in counts) and the Circulation Pressure to the display on the hand terminal. If PRINT TMP(Ø) was entered into the hand terminal, then the display would show the actual temperature @ thermocouple #1. The general syntax is

PRINT (variable name) ←ENT

A comma must be used if more than one variable is printed out.

PRINT (variable name),(variable name) ←ENT

The variable will remain in the computer's memory until they are reset to zero at the start of another DIAGNOSTIC cycle.

During the DIAGNOSTICS, the variables can be read to the hand terminal by using the following procedure

(<ctrl C)
PRINT (variable name) ←ENT
CONT ←ENT

The CONT command continues the computers software program from where it was interrupted with the <ctrl C> command.

NOTE: Using these commands during DIAGNOSTICS may cause failures, but the information obtained may still be useful.

NOTE: By placing the # after the print command that your request will be printed to the systems printer.

COMPONENT TEST PROCEDURES

INDEX

5.7.1 STERILE FILTER HOUSING CAP => OLD STYLE:

1. Perform pressure hold test on housing. If leak is detected, change o-ring and clean o-ring groove. Immediately retest.

2. Visual inspection of cap gasket. Look for tears, wrinkles, and glue separation. Note that gasket has nothing to do with leaks; a leaky cap is NOT related to a gasket problem.

3. Leaking caps can be verified by running the leak test with the machine upside-down and applying a soap solution to the cap/housing joint and looking for bubbles.

7. Observe the printer while the machine is cycling. If none of the above causes a problem, look for loose/improper connections. (SHAKE, RATTLE and ROLL)

8. Investigate as to whether or not an outside source of electromagnetic interference (EMI) exists. (eg. x-ray, electrocautery, etc.)

5.7.3 INFLATABLE SEAL:

1. Perform leak test per instructions using seal release port.

2. Problems of chamber leakage are never related to a leaky seal. Only a lid/frame misalignment can cause leakage that is seal related.

3. A leaky air manifold/air system can make the seal appear bad.

4. Test the system for leaks with the seal disconnected and capped. Connect a pressure gauge to the line from the manifold.

5.7.3.1 SEAL LEAK TEST

1. Connect pressure gauge to seal relief port at rear of Processor. *See note below.

2. Inflate the seal, using command:

   XBY(4ØØ2H)=3Ø ←ENT

   Check for leaks at fittings using soapy solution. No leaks should be detected before this test is performed.

3. After compressor has turned off (via pressure switch LS5), disable the compressor from restarting, using command:

   XBY(4ØØ2H)=28 ←ENT

4. Record pressure reading from pressure gauge

5. Wait 5 minutes and then record pressure reading from pressure gauge again.

6. If pressure difference is greater than 1.Ø psi suspect bad leaking seal or leaking fittings.

7. Pressure difference of less than 1.Ø psi is acceptable operation for STERIS SYSTEM 1 in field use.

8. Release air from Processor by using command:

   XBY(4ØØ1H) = 254

   Wait 1Ø seconds for air to exhaust, then enter:

   XBY(4ØØ1H) = 255

   Note: If the Processor does not have a seal relief port, then disconnect the hose from the air manifold to the circulation pinch valve and place meter there. The circ pinch valve solenoid must be energized during the test. XBY(4ØØ1H)=247.

5.7.4 AIR COMPRESSOR:

1. Perform maximum outlet pressure test (6ØØØ67).

2. If the compressor will not start, measure the voltage on the controller board between TP1 & CN3-9. The reading should be <1 VDC.

3. If the compressor has a hard time starting check the line voltage. 12Ø vac models (9ØA2) must have a line voltage from 1Ø8 to 132 volts. 22Ø-24Ø vac (9ØA1) models must have a line voltage from 2Ø7 to 262 volts.

4. If the problem is not electrical, then suspect the compressor relief solenoid. Does it release pressure from the air compressor outlet when the power is removed? (the air release will be audible.)

5.7.5 PRESSURE TRANSDUCER:

1. Verify power is being supplied to the transducer by measuring the voltage from CN9-1 to CN9-1Ø. It should be 14V ± 2V.

2. With the cap off of the Sterile Filter Housing, verify the Transducer Zero output: CN9-9 to CN9-1Ø is 1V ±.25V.

3. Verify transducer potentiometer (R29) adjustment on the PCBd.

4. Check the zero output by using a serial terminal:

   PRINT XBY(ØEØØ5H)←ENT
   Printout should be Ø ≤ P ≤ 3

5. Check the output at 4Ø psi.

   Connect a pressure gauge to the seal port.

   Start compressor with hand term.: XBY(4ØØ2H)=31 ←ENT

   Connect SF housing to air system: XBY(4ØØ1H)=223 ←ENT

   Readout the air pressure: PRINT XBY(ØEØØ5H)*.39 ←ENT

   Compare the readout to the pressure gauge. The reading should be within ± 3 psi.

6. Remove the pressure and check to see if readout returns to zero.

   Enter: XBY(4ØØ2H) = 28: XBY(4ØØ1H) = 254

   Wait 1Ø seconds, then type: XBY(4ØØ1H) = 255

   Read out the air pressure as in #5 above. The readings should be between 3.51 psi and 11.7 psi.

   To check for unstable output use the hand terminal and enter the following: XBY(4ØØ2H)=31: XBY(4ØØ1H) = 223 ←ENT

   Wait for the system to come up to pressure.

   Enter the following:

```
RAM ←ENT
1Ø PRINT XBY(ØEØØ5H),A,B,CR,
2Ø T=TIME:DO:WHILE TIME <T=.3
3Ø IF A<XBY(ØEØØ5H) THEN A=XBY(ØEØØ5H)
4Ø IF B>XBY(ØEØØ5H) THEN B=XBY(ØEØØ5H)
5Ø GOTO 1Ø
RUN ←ENT
```

Values printed will be: Instantaneous counts, Max. counts, Min. counts.

If the compressor starts rapid cycling, type <Ctrl C>. Cycling should stop. If it does not, then there is a problem.

To isolate the cause, do the following:

Using a serial terminal, type:
XBY(4ØØ2H)=24:XBY(4ØØ1H)=211 ←ENT

Monitor output for max, min, and change from reading to reading. If changes are ± 5 to 6 counts or greater, the problem is probably electrical noise. If readings are stable within ± 2 to 3 counts or less, or if the readings steadily decrease, the problem is probable mechanically related to the check valves in the air manifold.

If an electrical problem is suspected, call STERIS for additional help.

5.7.6 MEMBRANE PANEL:

Take an ohmmeter and connect common to CN6-1 on the printer/display PCBd.
Note: Pin 1 on CN6 is the pin nearest CN1. Pin 5 on CN6 is nearest the edge of the PCBd.
Test each switch in the following way after turning power off:

> Put other lead on CN6-2, press Start. CN6-4, press Diag. CN6-3, press Cancel.
> Each button press should show resistance of <5Ø ohm.

Check for shorts between switches by pressing buttons not connected to the switch being tested, and by measuring between switched outputs for no correction.

CN6-2 to CN6-4
CN6-2 to CN6-3
CN6-4 to CN6-3

If the switches check good, check wires/cables and connectors following signals to the controller PCBd.

5.7.6.1 BUTTON TEST:

1. Open the lid.

2. Press the START button.

   The READY light should blink.

3. Press the DIAGNOSTIC button.

   The READY light should blink.

4. Close the lid.

5. Hold down the CANCEL button and depress the START button.

   The Processor should enter Time Set Mode.

6. After printer stops, press the CANCEL button.

   Time Set Mode should advance to set minutes.

7. After printer stops, press the CANCEL button.

   The Processor should return to the ready mode and the READY light should be on.

8. Press the START button.

   The Processor should start a sterilant cycle. (READY light goes off and first light of operation turns on.

9. After printer stops, press the CANCEL button.

   CANCEL light should blink, and alarm should beep.

1Ø. After alarm stops, press the CANCEL button 2 times.

   The Processor should cancel the sterilant cycle.

5.7.7 CHECK VALVES - FLOAT BLOCK:

Symptoms of a bad check valve are:

Wet sterile air filter.
Leakage between float assembly plastic and brass parts.
Chamber level lows.
Drain time faults.
Windows being sucked in.
Spills from chamber during fill.
Flow of water down center of window during drain.
Failure to drain float block when chamber drains.

The best check of a valve is visual. Remove and inspect the valve body and o-rings for corrosion or contamination.

Replace if any of the conditions are noticed.

5.7.8 DRAIN CHECK VALVE:

1. To check for leakage, run a normal Processor cycle and monitor fluid flow down the drain hose. Flow should stop after initial fill and stabilization period.

a. If a continuous flow is detected, insert manual valve in line from the air/water valve to drain check valve and shut-off after initial fill.

b. If the manual valve stops the flow, then the drain check valve is bad. Replace it.

2. To test for seating pressure enter the following with a hand terminal:

```
RAM ←ENT
1Ø XBY(4ØØ1H)=223:XBY(4ØØ2H)=3Ø
2Ø T=TIME:DO:WHILE TIME<T+1Ø
3Ø XBY(4ØØ2H)=28:XBY(4ØØ1H)=254
4Ø T=TIME:DO:WHILE TIME<T+1Ø
5Ø PRINT XBY(ØEØØ5H)
6Ø XBY(4ØØ1H)=255
7Ø END
RUN ←ENT
```

When test run is complete, the hand terminal should read >9X< 3Ø. Repeat tests by retyping: RUN ←ENT

If readings fall below 9, the valve reseating pressure is too low; or the valve/system leaks.

If the reading is >3Ø, then the valve is closing too soon; or, passages may be plugged.

3. Check sterile filter housing gasket for wrinkles, tears or looseness.

4. Check the small brass filter in the housing for clogging.

5. Check the orifice in the drain block for clogging.

6. Check the air/water valve for clogging.

7. To check flow thru the Drain Check Valve/vent system: Install test plug in filter hsg., reinstall cap. Type the following:
XBY(4ØØ2H)=3Ø:XBY(4ØØ1H)=253 ←ENT

This will open the Inlet Water Valve when the system reaches pressure. Water will flow into the filter hsg. and to the drain thru the Brass Filter, the Air/Water Valve, the Drain Check Valve, and the Orifice. Observe the flow/lack of flow and troubleshoot accordingly.

5.7.9 PRINTED CIRCUIT BOARD INTERFACE / INPUT & OUTPUT TESTS:

The single board controller contains both the microprocessor and the electronics which interface to the rest of the system. The I/O functions include all the digital to analog, high power conversions and analog to digital conversion and sensing.

There is no single test to determine if this board is good or bad; however, all of its input and output signals are easily verified if one of them is suspected of being faulty.

You must first analyze which inputs or outputs are suspected for a specific test. Do this by running cycles or DIAGNOSTICS until a repeatable failure occurs and then analyze the operative inputs and outputs.

Proceed to the following tests and perform them. If the board performs properly when accessed manually, it is 99.9% probable that it is working automatically.

DO NOT change it just to see if the problem goes away. Look elsewhere for the cause or call STERIS for additional help.

5.7.9.1 HIGH VOLTAGE OUTPUTS - SOLENOID/RELAY DRIVERS:

These outputs control the high power devices in SYSTEM 1. They can be checked in the following manner, at connect CN3.

a) With the SYSTEM 1 Reset (Green "Ready" lamp on), measure the voltage at pins 1, 2, and 7, referenced to pin 12. The readings should be >1ØØ vac. This is a check to see if proper operating voltages are present. If the proper voltage is not detected, the output is either shorted (permanently enabled) or the device being driven is open.

b) Turn on the air compressor by typing XBY(4ØØ2H)=3Ø ←ENT. Allow the system to come to pressure (the air compressor will stop). Measure the voltage at pins 1,2,3,4,5,6, 7 and 8 referenced to pin 12. The readings should be >1ØØ vac on all of the listed pins. If no voltage is detected on pins 3,4, 5, 6 or 8 (all pins are the same state), then suspect LS2 or the system is not reaching pressure properly.

c) With the system at pressure selectively activate the outputs you want to test by typing XBY(4ØØ1H)=XXX ←ENT. Substitute the proper number for XXX as follows:

Fill Valve	(SOL7)	- XXX=253	Pin 3
Drain Valve	(SOL4)	- XXX=251	Pin 4
Circulation Valve	(SOL3)	- XXX=247	Pin 5
Dump Valve	(SOL5)	- XXX=239	Pin 6
Circ. Pump	(SSR2)	- XXX=127	Pin 8

Monitor the pin of the output under test and pin 12 for > 1ØØ vac with the output off and for < 2 vac with the output on. If an output does not turn on (go low < 2 vac) suspect the board or the connection between boards. If the output is always low (< 2 vac) or appears open (voltage readings fluctuating randomly) suspect an open solenoid or device. Resistance of solenoid coils 1, 2, 3, 4 & 8 ≈ 5M'Ω.

d) To complete checks, disable the air compressor and relieve system pressure by typing:

XBY(4ØØ2H)=28: XBY(4ØØ1H)=254 ←ENT **

Wait 15 seconds then type:

XBY(4ØØ1H)=255 ←ENT

**NOTE: Leaving this line energized for extended periods can damage SOL2!

Pressure should vent and enable voltage to pins 3,4,5,6 and 8 should go to zero vac. This tests the SOL2 output.

(continued)

e) To check SOL1 output, type the following:

XBY(4ØØ1H)=223 ↵ENT

Measure pin 7 to pin 12 for <2 vac. Then de-energize output by typing:

XBY(4ØØ1H)=255 ↵ENT

f) To check the output on pin 1 (the heater control), run a normal cycle. Monitor voltage between pin 1 and pin 12 (should be > 1ØØ vac). Thirty seconds after the Processor fills (with water at < 5Ø°C), the heater should turn on and the voltage will go to < 2 vac. If this does not happen, check inlet water temp. (Must be between 43-48°C), then check sandwich of PCBds. If all items test good, then suspect the board. If the board is not in error, then suspect wiring, SSR1, or board output shorted.

5.7.9.2 5 VDC SSR DRIVE SIGNALS:

a) To test these outputs, measure voltage across connector pins 39,40 (SSR3-Comp), and pins 41,42 (SSR4-H.P. Pump). Voltage should be approximately Ø VDC with outputs off (system in "Reset" condition).

b) Enable the compressor (with system at Ø psi):

XBY(4ØØ2H)=3Ø ←ENT

Voltage at 39, 4Ø should read approximately 5 VDC.

c) If reading is correct and compressor does not start, suspect a problem elsewhere: Wiring, SSR-3, Compressor motor. If reading is incorrect, verify proper input to CN9-3. Pin should read Ø VDC to GND (CN9-1Ø).

d) If reading is correct, then board or sandwich of boards is probably bad. If reading is incorrect, check LS5, wiring, air pressure trapped in system. etc.

e) Enable circulation pump:

XBY(4ØØ1H)=191 ←ENT

Voltage at pins 41, 42 should go to approximately 5 VDC. If this reading is correct and the pump does not start, suspect a problem in SSR4, wiring, or pump motor.

5.7.9.3 THERMOCOUPLE (TC) INPUTS CN1:

a) Unplug processor.

b) Perform TC short test (page 9.12) on all thermocouple.

c) Disconnect all TC's from control board. Plug processor back in. Check output of all TC by typing the following:

Print XBY (0E00XH) <CR> where X = 0 for TC1
1 for TC2
2 for TC3

All addresses should read 255. If any address does not read 255, the board is defective and must be replaced.

d) Re-connect all TC's. Place digital temperature probe in drain line. Dump water, XBY (4001H)=235, and record counts on TC3. Fill unit, XBY (4001H)=249, and immediately record counts on TC1 and TC2. All readings should be within 2 counts of each other, and be approximately the same as temperature probe (TC reading + Room temperature sensor reading/2). If any TC does not read within 2 counts of the others, replace that TC.

e) Read out SYSTEM 1 room temp. sensor by typing:

PRINTXBY(ØEØØ3H) ←ENT

Sensor should read approximately twice the room temp. in degrees C.

f) NOTE: Sensor reads machine room temp. (on the circuit board). If ventilation is blocked, or if the fan is stopped, it will read excessively hot and the machine will have problems reading normal water temperatures.

5.7.9.4 CONDUCTIVITY PROBES INPUT/OUTPUT:

NOTE Concentration low failures can occur if inlet water temperature is too high.

a) Suction water our of the transition blocks.

b) Unplug processor and disconnect CN-9.

c) Plug processor in and record voltage at TP4 and TP5. Voltage should be >4.5VAC. If voltage is <4.5VAC suspect a faulty control board.

d) Unplug processor and reconnect CN-9. Plug processor back in and measure voltage at TP4 and TP5. Voltage should equal the voltage recorded in step "c". If the voltage reading is incorrect, suspect faulty conductivity probes or a signal to chassis ground short (See step "e") .

NOTE Fluid in the transition block will create a current path between the probes, which can result in a lower voltage reading. Ensure the transition blocks are completely dry.

e) Turn the machine off (disconnect power), then measure resistance from CN9-1Ø to chassis ground. The reading must be >1 Megaohm.

f) If the resistance reading is incorrect, then there is probably a signal to chassis ground short. The most likely component to suspect is a thermocouple. Disconnect them one by one until the short goes away, then test the individual thermocouple by reading resistance between either (or both) leads and the chassis. The reading should be infinite (open circuit). If all thermocouple test good and the short persists then there is a wiring problem with the harness, cabling or other component.

g) If these tests all pass and the SYSTEM 1 still fails the conductivity portion of the DIAGNOSTIC, then change the PCBd. If the system 1 is failing the normal cycle for concentration low and passing the DIAGNOSTIC, then suspect corroded probes or bad connections to the probes.

5.7.9.5 COMPRESSOR PRESSURE SWITCH INPUT:

a) With the system "reset", the lid closed, and the air system at Ø psi, measure the voltage at CN9-3 to CN9-1Ø. It should be < .4 VDC. If this voltage is not correct, suspect LS5, wiring, or trapped air pressure in the system.

b) Start the air compressor by typing:

XBY(4ØØ2H) = 3Ø ↵ENT

The air compressor should run until the voltage between CN9-3 to CN9-1Ø goes to > 2.5 VDC (Air compressor stops). If the voltage does not go to > 2.5 VDC in approximately 2 minutes, then remove the connector (CN-9) and the compressor should stop. If it does not stop, check the output and replace the board if necessary. If it does stop, then check the system maximum pressure and LS5.

5.7.9.6 PRESSURE TRANSDUCER AND PRESSURE CONTROL CIRCUITRY:

a) With the system reset and the cap off of the sterile filter housing, remove the sterile water filter and any excess water in the housing.

I) CN9-1 to CN9-1Ø should read 14.6 ± 1 VDC for four layer boards/ 14 ± 2 VDC for two layer boards.

ii) CN9-9 to CN9-1Ø 1 ± .25 VDC (this is the zero reference reading). NOTE: The normal range of Xducers is .99Ø to 1.ØØ3 VDC.

b) If the reading is incorrect, disconnect CN9 and measure pins on the board again. If the reading is still bad, replace the board. If the reading is good, suspect PT1 or wiring.

b.1) If the reading in step AI is incorrect, disconnect CN9 and measure pins 1 to 1Ø. If the reading is still bad, replace the board. If the reading is good, suspect the Xducer or wiring.

c) Check Xducer POT adjustments. (Ref. Procedure #6ØØØ73 for single board controller or #6ØØØ6Ø for two board controller set.)

NOTE: Remember this is a pressure measurement device and at high altitudes, the zero will show different readings than at sea-level.

c.1) Check Xducer POT R29 calibration using procedure (#6ØØØ73) for four layer controller boards (P/N 3ØØØ76 & 3ØØØ86). {Use procedure #6ØØØ6Ø for two layer boards}. **Do not adjust the potentiometer at this time.** If the POT is incorrectly set between 1.6 and 2.Ø counts continue with step d.

NOTE: The Xducer is a pressure measurement device and at high altitudes, the zero will show different reading than at sea level.

c.2) If the POT is out of calibration, a determination must be made as to whether the problem is mechanical (float block check valves, kinked drain hose, etc.) or electronic (Xducer, PCBd, wiring).

c.3) Inspect all mechanical components that could cause excess pressure to be held in the chamber (i.e. header block, CK2 &3, the problem is probably electronic).

c.4) If all mechanical components are OK, test the pressure Xducer. Install a new Xducer in the system. Run the R29 calibration again. Assuming the previous calibration was done correctly, the readout with the new Xducer should be very close to the 1.6 to 2.Ø count range (a slight adjustment may be necessary). If the reading is no different than the original reading, suspect the board.

c.5) If step c.4 reveals the board is bad, reinstall the original Xducer and replace the controller board.

d) Install a test plug in the filter housing and re-install the housing cap. Connect a pressure gauge to the seal relief port. Type the following:

XBY(4ØØ1H) = 223:XBY(4ØØ2H) = 31 ←ENT

The compressor should start, the system should pressurize and reach 4Ø psi ± 2 psi within 2 minutes nominal. (5 minutes max.)

e) If the compressor stops, verify pressure with the gauge at 4Ø psi ± 2 psi. Measure the voltage at CN9-9 to CN9-1Ø. The voltage should be "X".
Zero reference reading +1.52 VDC < X < zero reference reading +1.62 VDC.

The compressor should now cycle on and off to maintain pressure. Excessive (1 cycle in 2 seconds) is improper. Investigate unsteady Xducer output or electronics if the compressor cycles excessively.

f) Read out the pressure by typing:

PRINT XBY(ØEØØ5H) ←ENT

The reading should be between 97 and 1Ø8. If the reading is incorrect and the system voltages read in step E are correct, suspect the PCBd.

g) If the readings are correct so far, test the high-gain mode by typing the following:

XBY(4ØØ2H)=24:XBY(4ØØ1H)=211 ←ENT

PRINT XBY(ØEØØ5H) ←ENT

The readout should be between 7Ø and 25Ø. If the system air pressure is still 4Ø psi ± 2 psi, then suspect the PCBd. If the pressure is out of limits, then look for a leak.
NOTE: If a program is written to continuously read out pressure, it may read improperly due to computer switching noise. The system automatically compensates for this but you <u>cannot</u> do this from a hand terminal. If excessive clicking is not encountered the system is operating properly.

5.7.9.7 LID LIMIT SWITCH:

a) With the lid open, type:

PRINT XBY(4ØØØH).AND.1 ←ENT

The printout should be equal to 1. If it is not equal to 1, measure the voltage between CN9-6 and CN9-1Ø. Voltage should read > 2.8 VDC. If not, disconnect CN9 and recheck pins on PCBd. If the reading is still low, suspect the controller/IO PCBd.

b) If disconnecting connector causes proper voltage reading, then suspect LS4. Use the lid switch adjustment procedure.

c) With the lid closed, type:

PRINT XBY(4ØØØH).AND.1

The printout should be equal to zero. If it is not equal to zero, try actuating the lid switch flag by hand (screwdriver through left hand latch hook slot), carefully, while repeating the read out. If this works, proceed to the lid switch adjustment procedure.

d) If test section fails, measure the voltage at CN9-6 to CN9- 1Ø with the lid closed. The reading should be < .4 VDC. If the voltage reading is correct, suspect the controller/IO board.

5.7.9.8 FLOAT SWITCH:

a) With the Processor "reset" and the processing chamber empty, type:

PRINT XBY(4ØØØH).AND.2

The printout should be zero. If it is incorrect, measure the voltage at CN9-5 to CN9-1Ø. The reading should be < .4 VDC. If the voltage is correct, suspect the controller/IO board.

b) If the voltage is incorrect, short wires #11 and #7 at the float switch. Repeat step if the proper readout is obtained, suspect the float switch LS3, or the float assembly full of water. If the readout is still incorrect, suspect the controller/IO board.

c) Disconnect either wire on float assembly, then type:

PRINT XBY(4ØØØH).AND.2

The printout should be 2. If it is incorrect, measure the voltage at CN9-5 to CN9-1Ø. It should be > 2.8 VDC. If the voltage is correct, suspect the controller/IO board.

5.7.9.9 CN8 SIGNALS:

a) CN8 on the controller/IO board is basically a through connector to/from the control panel. To check the signals, use the following list and check for proper voltage level.

CN-8 SIGNALS

Pin		Check
1 & 2	5 VDC	Power ± .5 VDC
3	Printer	Signal(Cannot be checked with meter)
4 & 13	Gnd.	Signal ground
5	LT1	Control Panel Lamp drivers. A voltage of > 2.8 VDC means that a lamp should be lit. A voltage of < .4 VDC means the lamp should be dark.
6	LT2	
7	LT3	
8	LT4	
9	Cancel	
1Ø	Diag.	
11	Complete	
12	Ready	
14	Diag Sw.	Normally open switch reading >2.8 VDC, when activated, should read < .4 VDC.
15	Cancel Sw.	
16	Start Sw.	
17	RS-232 IN	Cannot be checked with the meter
18	RS-232 OUT	
19	DIP SW-1	Off condition = > 2.8 VDC On condition = < .4 VDC
2Ø	DIP SW-2	

1 149
2 151
3 151
4 151
5 152
6 152

5.7.1Ø STERILE FILTER ASSEMBLY:

1. Basic testing of the sterile filter housing assembly is to verify that it does not leak, and must be done ONLY AFTER the verification of the air system integrity, the air compressor output, and pressure Xducer functionality.

2. Pressure Hold Test: Remove sterile filter cap, remove filter, suction all water from the housing, install test plug and re-install cap. Enter the following commands with the hand terminal:

   F3= 223 : F4= 31

   XBY(4ØØ1H) = 223:XBY(4ØØ2H) = 31 ←ENT

   Unit should reach pressure in 2 minutes or less (compressor turns off). Allow the pressure to stabilize for 5 minutes, then enter the following commands:

   XBY(4ØØ2H) = 24:XBY(4ØØ1H) = 211 ←ENT

   Read out the starting pressure by entering the following command:

   PRINT XBY(ØEØØ5H) ←ENT

   Record the value displayed. Repeat this command and record the pressure value every minute for 5 minutes. The value should not DECREASE by more than 3 counts in 5 minutes. Release the pressure from the sterile filter assembly and inflatable seal by entering the following commands:

   f4= F3=

   XBY(4ØØ2H) = 28:XBY(4ØØ1H) = 254 ←ENT

   Wait 1Ø seconds for the air to exhaust, then enter:

   f3

   XBY(4ØØ1H) = 255 ←ENT

   This test should be run at least 3 times to verify results.

   NOTE: Continuous automatic readout of the pressure using the hand terminal can cause erratic readings. Therefore, do not monitor pressure using an automatic RAM program. Additionally, heat can be generated by the energized Air/Water Valve (SOL8) during this test, thereby increasing the temperature in the housing. This can cause a pressure increase in the housing. This phenomenon should be taken into consideration during this test.

3. Kepner Valve Test: To determine if this valve is leaking, remove inlet water pressure by turning off the water supply to the Processor and loosening the water inlet hose at the rear of the machine during or at the end of the pressure hold

test. If the pressure in the filter assembly drops suddenly, or air escapes from the water inlet at the rear, the Kepner valve is defective and must be replaced.

4. Air/water Solenoid Valve Test: Listen to the drain hose during the pressure hold test. If any air is heard escaping from the drain, this indicates a leaking air/water solenoid valve. This can be verified by inserting the ball valve test apparatus in the line from the air/water solenoid valve and the drain. Pressure changes during the pressure hold test can be controlled by operating this valve. Replace the air/water solenoid valve if pressure changes are effected by the ball valve apparatus.

5. Other Tests: If the Kepner valve test and the air/water solenoid valve test do not lead to the discovery of causes of pressure loss, remove and inspect the SF cap for possible contaminates or defects, and look for leakage at glue joint, pressure transducer/housing interface, and Kepner valve nut/housing interface using a soap solution during the pressure hold test.

6. If none of these tests locate the leak, the next step is to physically isolate parts of the system by performing the following:

   a) Drain water from (or cap) QD post in the drip pan. Turn SYSTEM 1 over and remove the lower shroud. Install a shutoff valve in the line from the air manifold to the SF housing.

   b) Rerun pressure hold test and after the 5 minute hold period and data entry, close the shut-off valve. Continue to monitor pressure. If no further leaks are detected, the CK6 in the air manifold or fittings and lines are bad. Replace and retest.

7. If system still leaks, then the leak is definitely in the filter housing assembly. NOTE: Carefully check shut-off valve assembly to insure it is not leaking or improperly connected.

8. Check the air/water valve for leakage by removing the drain/vent line from the top of the valve and capping it with cap. Re-perform pressure hold test. NOTE: You will not be able to release the pressure from the housing when done automatically. To release pressure, slowly loosen the cap after removing power to allow air to bleed out. If the above pressure hold test is successful, then replace the air/water valve.

9. If no component leaks have yet been located, use soapy water to examine the fittings from the air/water valve to the air manifold and the filter housing for leaks.

(continued)

Repair / replace as necessary.

1Ø. If the problem appears intermittent, especially if the unit has been randomly failing SFMT with or without numbers, but all checks so far show no leaks, the components to suspect are the active ones (i.e. parts that change state when air or water flows through the system). These parts are the air/water valve, the Kepner valve, and sometimes the housing cap o-ring. To properly test these parts, water must be allowed to flow through them prior to further leak tests. To do this the unit should be right-side-up, and adaptor tray installed, and the unit connected to inlet water and drain. Then type the following:

XBY(4ØØ2H) = 3Ø:XBY(4ØØ1H) = 253 ↵ENT

The seal will inflate and when the system reaches ≈3Ø psi, water will start to flow through the SF housing into the chamber and down the drain. Run water for at least 3Ø seconds and then stop by typing:

XBY(4ØØ1H) = 255 ↵ENT

You can now proceed to repeat the leak tests of the active components. It may be necessary to repeat this step multiple times until the problem is located.

5.7.11 ADDITIONAL TROUBLE SHOOTING TIPS FOR SFMT PROBLEMS:

1. Tests can be run with a filter in place. Normal fully wetted filters will show pressure losses of approximately 15 to 3Ø counts. When the SFMT is run, normally the SYSTEM 1 stores the value of the pressure drop under the variables name PS. To read this out after each successful test, type the following:

   PRINT PS ←ENT

   The value will be printed (in counts) of the starting pressure - ending pressure. The go/no go test limits for the different filter types are given below:

PN A- 15Ø2	> 38
PN A- 15Ø5	> 42
PN A- 1525	> 59

   If you are running consistently very close to the limit (within 2-4 counts) and changing filters does not help, then you are probably having an air leak problem. If you can change the filter and you get a large change in the "passed" reading that remains steady over 2 to 3 tests, then you probably had a failed filter. At the end of a filter's life cycle (as short as 1Ø - 15 cycles on the A-15Ø2) it may exhibit erratic SFMT test results.

   Also, erratic test results, especially after a filter change, can indicate failure of the filter to wet properly. This is typically related to restricted air/water flow through the air/water valve and drain check valve. If tests with the test plug always show no leaks, and SFMT failures occur 2 - 3 times in a row with a real filter and then disappear, there might be a wetting problem. Test water flow through the venting system as follows:

   a) Install test plug with machine upright connected to water and drain, adaptor tray installed.

   b) Type the following:

      XBY(4ØØ2H) = 3Ø:XBY(4ØØ1H) = 253 ←ENT

   When the system reaches ≈3Ø psi, the water inlet valve will open (audible click).

   c) Observe water flow down the drain. A small, steady flow should be noted. If not, the path through the FRAM filter, air/water valve (de-energized), the .Ø3Ø orifice, and the drain check valve may be blocked. Check and repair each of these as necessary.

If the SFM appears to plug quickly, and the system incurs large increases of fill time (over 2 to 4 cycles), the problem may be improper venting of air from the housing. To verify this, first remove the filter housing cap. The housing may be full of water when the cap is first removed, but some fluid may begin to drain off. Allow one (1) minute for this drain off to occur and the fluid level to stabilize. Then, using a cup, fill the housing with water and replace the housing cap. Run another sterile cycle and monitor the initial fill time. If the fill time decreases significantly, there is most likely a venting problem. Isolate and repair the problem.

5.7.12 GFI TRIPPING PROBLEMS:

1. When troubleshooting a GFI tripping problem, you must isolate it to a component/system/wire, etc. that when energized, causes the GFI to trip.

2. Verify the fix by running repeated tests with the component disconnected (No failure must occur), and connected (Failure occurs). Replace the component and re-test.

   NOTE: Intermittent failures must be verified for at least 2 times the intermittent interval.

5.7.13 CIRCULATION PUMP:

1. To control the pump, type:

XBY(4ØØ1H)=127 ←ENT	turns pump on
XBY(4ØØ1H)=254 ←ENT	turns pump off

2. Test output of controller PCBd. If output of PCBd checks and SSR4 is acceptable, remove shroud.

3. Check for voltage across the circulation pump. If voltage is present across the pump and pump is not running, replace the pump.

5.7.14 THERMAL CUTOUT SWITCH:

1. If voltage is not present across the heater element when the heater is on, then remove the shroud to test the thermal cutout switch and SSR1.

2. Testing the thermal cutout switch can be done visually first. See if the red button is in the tripped "out" position. Depress the button. Is there a "click" when the button is depressed? Finally, measure the continuity of the switch when one wire is removed.

3. Because the thermal cutout switch is resettable, it does not need to be replaced unless there is not continuity in it after depressing the red reset button.

5.7.15 DRAIN PINCH VALVE:

1. Initiate a regular sterile processing cycle without using a sterilant charge.

2. After the chamber is filled, interrupt the cycle with the hand terminal by typing:

   CTRL C

3. Insure that the heater is off before proceeding by typing:

   XBY(4ØØ2H)=3Ø ←ENT

4. Turn off the pumps and maintain a closed drain pinch valve:

   XBY(4ØØ1H)=251 ←ENT

5. Observe the drain line. If water is coming from the drain, the pinch valve is not closed. Possible causes include:

   a) PCBd connections.

   b) Leaking air lines to the pinch valve.

   c) A hole in the pinch valve sleeve. Air will bubble into the chamber if this is the case.

   d) Twisted, or bad pinch valve sleeve.

5.7.16 POWER SUPPLY:

1. With Power Switch OFF, remove the four-position connector (CN4) from the controller/IO board. Lift controller board & mounting door to expose power supply. Turn Power ON.

2. Measure the voltage between TB2 pin 1 (or 2) on the power supply and wire 1Ø (GND) on flying connector of harness. Also, measure the voltage between TB2 pin 3 (or 4) and wire 9 on flying connector of harness. It should be 5 VDC ± .Ø25 V in either case.

3. If voltage is Ø.ØØ, check the fuse on the power supply.

4. If the fuse is OK, check the input voltage to the power supply. Input voltage should measure 115 vac at connector TB1 next to the fuse.

5. Check for output of the power supply at TB2. It should be 4.75 VDC minimum, 5.25 VDC maximum (with the load removed).

6. If voltage is outside of the acceptable limits, or if the voltage is Ø.ØØ, replace the power supply.

5.7.17 INLET WATER VALVE:

1. Verify (audible) operation of inlet water valve solenoids by energizing and de-energizing them. Type:

XBY(4ØØ2H)=3Ø ↵ENT	inflates seal
XBY(4ØØ1H)=241 ↵ENT	energizes fill valve
XBY(4ØØ1H)=223 ↵ENT	de-energizes fill valve

5.7.18 STERILE FILTER CHECK VALVE (CK6):

This test component should only be suspected as a problem if the Kepner valve, the sterile filter, the sterile filter cap, the sterile filter housing, the air/water solenoid valve have been checked.

1. Perform pressure hold test. Record pressure drop in 5 minutes.

2. Connect ball valve apparatus between air/water solenoid valve and the air manifold.

3 Repeat pressure hold test. After the 5 minute stabilize period, turn off air compressor [XBY(4ØØ2H)=28], then close the ball valve. Record pressure drop in 5 minutes.

4. If pressure drop is effected by the presence of the closed ball valve apparatus, CK6 is defective. Replace the check valve.

5.7.19 HIGH PRESSURE PUMP:

Verify High Pressure Pump flow and pressure:

1. Remove adapter tray from processor. Leave the lid open for the entire test.

2. Place large diameter silicone tubing over the circulation pump Q.D. post.

3. Place small diameter tubing over H.P. Q.D. post.

   NOTE: To measure pressure: Place one end of the silicone tubing over the high pressure quick disconnect post and secure it in place with a tie wrap. Slide the remaining end of the silicone tubing over the threads of a swage lock tee fitting and secure this end with a tie wrap. Connect the Omega pressure gauge to the swage tee fitting. On the remaining threads of the tee, connect the ball valve apparatus (leave the valve open for now).

4. Fill the drip pan so the Q.D. posts are covered by approximately two inches of water.

   XBY(4ØØ2H)=3Ø ←ENT inflates seal
   XBY(4ØØ1H)=249 ←ENT fills drip pan
   (be ready with next command)
   XBY(4ØØ1H)=251 ←ENT closes drain pinch valve

5. Start pumps:

   XBY(4ØØ1H)=59 ←ENT

6. Collect water from the H.P. Q.D. post tubing for one (1) minute into a graduated cylinder (or other measuring device). The minimum amount collected should be 8ØØml.

   NOTE: To measure pressure: With pumps on, bleed the pressure gauge line of as much air as possible by loosening the tubing to gauge connection slightly. Close the ba ll valve. Once fluid drips from the tubing/gauge connection, tighten the connection and open the ball valve. Slowly close the ball valve and record the maximum pressure indicated on the pressure gauge. The pressure should be between 13.5 psi and 19.5 psi.

(continued)

7. Measure the switch voltage with pumps on by entering: XBY(4ØØ1H)=59 ←ENT Wait two minutes for the pumps to prime. With both pumps running, the voltage should be at or near Ø VDC.

   NOTE: Some H.P. Pumps have difficulty priming when replaced. Voltage from CN9-4 to CN9-1Ø reading approximately 2.5 VDC may indicate a pump priming problem. Running both pumps with a full chamber for ten to twenty minutes may be necessary to prime a newly installed H.P. Pump.

8. Drain water:

   XBY (4ØØ1H) = 55 ←ENT — open drain + start both pumps

9. Reset system:

   XBY (4ØØ2H) = 28 ←ENT — de-energize air compressor
   XBY (4ØØ1H) = 254 ←ENT — deflate seal

   Wait 1Ø seconds for air to exhaust.

   XBY (4ØØ1H) = 255 ←ENT — de-energize seal release solenoid

NOTE: When replacing a H.P. Pump, the blue wire from the pump connects to wire #6 and the yellow wire from the pump connects to wire #1.

5.7.2Ø HIGH PRESSURE PUMP SWITCH (LS6)

Should H.P. Pump Failure or H.P. pump Fault messages occur on a unit, the first component to suspect is the High Pressure pump. To verify the High Pressure Pump is working properly, use the procedure on page 5.7.19. If the pump checks out properly, verify LS6 operation using the following procedure.

1. Unplug processor.

2. Disconnect CN9 and measure resistance from CN9-4 to 9-1Ø on the connector. A reading of infinite should be obtained. Any resistance read indicates a shorted switch or wiring.

3. Reconnect CN9. Plug in processor.

4. Measure and record the 5 VDC power supply output.

5. a) Measure CN9-4 to 9-1Ø for a voltage identical to the power supply output voltage ± .1 VDC. A voltage of less than 3 VDC indicates a short in the wiring or switch.

   b) ? XBY(4ØØØH).AND.4 . The display should read 4. A reading of Ø with a voltage of approximately 5 VDC indicates a defective PCBd.

   NOTE: The following RAM program may be used to print out the 4ØØØH address readout on the printer. After entering this program into the memory, enter RUN when looking at the address bus in the steps of this procedure. The program will print out the value until "CTRL C" is entered. This is helpful in determining if the pump is properly primed. Consistent Ø's or 4's should be printed. Any random sequence of Ø's and 4's together needs to be thoroughly investigated.

```
RAM
1Ø ?# XBY(4ØØØH).AND.4
2Ø T=TIME:DO:WHILE TIME <T+2
3Ø GOTO 1Ø
RUN
```

6. Insert a tray (flexible if available with no connectors on the right-hand port) and start a sterile processing cycle without a sterilant cup. When the fill is complete, interrupt the program by entering: CTRL C ←ENT followed by XBY(4ØØ2H)=3Ø ←ENT

7. Measure the switch voltage with pumps on by entering: XBY(4ØØ1H)=59 ←ENT Wait two minutes for the pumps to prime.

   NOTE: Some H.P. Pumps have difficulty priming when replaced. Voltage from CN9-4 to CN9-1Ø reading approximately 2.5 VDC may indicate a pump priming problem. Running both pumps with a full chamber for ten to twenty minutes may be necessary to prime a newly installed H.P. Pump.

(continued)

8. a) Measure the voltage from CN9-4 to 9-1Ø for .ØØ5 VDC or less. A voltage of greater than .ØØ5VDC indicates some resistance in the switch or connections. Suspect an internal leak in the switch (bad switch) or a wiring problem.

   b) Enter: ? XBY(4ØØØH).AND.4 ←ENT The display should read Ø. A good voltage reading with a bad display value indicates a bad PCBd. A bad voltage will cause a bad display value.

9. Wait a minimum of five minutes. Measure CN9-4 to 9-1Ø again. The voltage should not increase from the reading taken in step 8. If the voltage does increase, the switch has an internal leak (bad switch).

1Ø. Enter: XBY(4ØØ1H)=123 ←ENT

11. a) Measure CN9-4 to 9-1Ø for a voltage identical to the power supply output voltage ± .1 VDC. A voltage of less than 3 VDC indicates a short in the wiring or switch.

   b) Enter: ? XBY(4ØØØH).AND.4. The display should read 4. A reading of Ø with a voltage of approximately 5 VDC indicates a defective PCBd.

12. Enter: ROM ←ENT followed by RUN ←ENT. The system will cancel the sterile processing cycle.

WIRING DIAGRAM & CIRCUIT BOARD LAYOUTS

INDEX

8 7 6 5 4 3 2 1

REVISIONS						
ZONE	LTR	EO	ERO	DESCRIPTION	DATE	APPROVED
	F			SEE SHEET 2 FOR REVISION LEVEL		

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	
1	R48	60B1092430	RESISTOR MF RN55 243 OHM 1% T1 1/8W	
1	R35	60B1093400	RESISTOR MF RN55 340 OHM 1% T1 1/8W	
1	R49	60B1091331	RESISTOR MF RN55 1.33K OHM 1% T1 1/8W	
1	R25	60B1098871	RESISTOR MF RN55 8.87K OHM 1% T1 1/8W	
6	R6,23,	60B1091002	RESISTOR MF RN55 10.0K OHM 1% T1 1/8W	
	24,27,			
	37,39			
1	R33	60B1091022	RESISTOR MF RN55 10.2K OHM 1% T1 1/8W	
2	R38,40	60B1091242	RESISTOR MF RN55 12.4K OHM 1% T1 1/8W	
1	R13	60B1091962	RESISTOR MF RN55 19.6K OHM 1% T1 1/8W	
1	R34	60B1092942	RESISTOR MF RN55 29.4K OHM 1% T1 1/8W	
1	R12	60B1093012	RESISTOR MF RN55 30.1K OHM 1% T1 1/8W	
1	R8	60B1095112	RESISTOR MF RN55 51.1K OHM 1% T1 1/8W	
1	R36	60B1099092	RESISTOR MF RN55 90.9K OHM 1% T1 1/8W	
3	R7,20,	60B1091003	RESISTOR MF RN55 100K OHM 1% T1 1/8W	
	22			
3	R15,19,	60B2570103	POT 20 TURN PCB 10K OHM	
	29			
4	R21,31,	60B3051001	RESISTOR MF RN55 1.00K OHM .1% T1 1/8W	
	42,44			
3	R32,41,	60B3057503	RESISTOR MF RN55 750.0K OHM .1% T1 1/8W	
	43			
3	63,66,	61B0030103	CAP .01UF 50V CERAMIC	
	75			
10	C2,5-	61B0030104	CAP .1UF 50V CERAMIC	
	7,35,			
	37,41,			
	42,62,			
	73			
8	C48-51,	61B0030105	CAP 1UF 50V CERAMIC	
	58,64,			
	67,72			
10	C8-12,	61B0280106	CAP 10UF 25V TANT	
	30,53-			
	55,65			
4	C68-71	61B0280476	CAP 47UF 25V TANT	
1	C61	61B0650227	CAP 220UF 16V ,ALUM ELECT	
2	C28,29	61B0660330	CAP 33PF 50V CERAMIC	
37	C1,3,	61B0890104	CAP .1UF 50V CERAMIC	
	4,13-			
	27,31-			
	34,36,			
	38-40,			
	43-47,			
	52,56,			
	57,59,			
	60,74			
1	X1	62B03300	CRYSTAL 11.0592 MHz HC-18	
REF		98A04900	INSPECTION REPORT 30D17200,30D17200-1	
REF		98A05000	INTRODUCTION REPORT TO FORM 98A04900	
3	U9,11,	52B01400	74LS138	
	13			
2	U1,16	52B02100	74LS541	
1	U18	52B02900	74LS08	
1	U22	52B04800	74LS540	
2	U28,30	52B04900	7406	
2	U23,29	52B12100	74LS273	
1	U12	52B12200	74LS373	
1	U14	53B00800	RAM,6264, 120ns	
0	U19	53B03900	EPROM,27C128,CMOS,200ns	
1	U6	53B04700	RAM W/BATTERY BACK-UP & RTC MK48T02B-25 250nS	
3	U27,31,	54B00300	QUAD OP AMP,LM324	
	32			
1	U33	54B05800	OP AMP CHOPPER STAB.	
1	U24	54B06100	SWITCH-CAP BUILD BLK,LTC1043CN	
1	U43	54B07900	QUAD SPST MONO CMOS ANALOG SWITCH,DG201	
1	U34	54B08000	TEMP SENSOR,C,LM35	
1	U25	54B08300	BANG-BANG CONTROLLER, LTC1041CN	
1	U21	54B10700	MAX161,A-D,CMOS 8 BIT,8 CHANNEL	
1	U7	56B03400	VOLTAGE REGULATOR,78L08A	
1	U3	56B04400	VOLTAGE REG,ADJ.,LM337	
1	U26	56B06500	REFERENCE 2.5V,AD584JN	
1	U10	56B06600	VOLT REG,SWITCHER,DUAL OUTPUT +/-15V, MAX743	
2	R3,45	60B0040101	RESISTOR CF 100 OHM 1/4W 5%	
1	R11	60B0040122	RESISTOR CF 1.2K OHM 1/4W 5%	
2	R46,47	60B0040152	RESISTOR CF 1.5K OHM 1/4W 5%	
2	R1,16	60B0040472	RESISTOR CF 4.7K OHM 1/4W 5%	
4	R4,5,	60B0040103	RESISTOR CF 10K OHM 1/4W 5%	
	14,18			
1	R28	60B0040153	RESISTOR CF 15K OHM 1/4W 5%	
1	R26	60B0040333	RESISTOR CF 33K OHM 1/4W 5%	
1	R30	60B0040753	RESISTOR CF 75K OHM 1/4W 5%	
1	R17	60B0040683	RESISTOR CF 68K OHM 1/4W 5%	
1	R10	60B0040104	RESISTOR CF 100K OHM 1/4W 5%	
1	R2	60B0040478	RESISTOR CF 4.7 OHM 1/4W 5%	
1	RN4	60B0500102	RESISTOR NET SIP 10 PIN 1.0K OHM X 9 BUSSED	
2	RN1,3	60B0500103	RESISTOR NET SIP 10 PIN 10K OHM X 9 BUSSED	
2	RN2,5	60B0530102	RESISTOR NET SIP 6 PIN 1.0K OHM X 5 BUSSED	
1	RN8	60B0550104	RESISTOR NET SIP 8 PIN 100K OHM X 4 ISOLATED	
1	RN6	60B0560102	RESISTOR NET SIP 6 PIN 1.0K OHM X 3 ISOLATED	
1	RN7	60B0591002	RESISTOR NET DIP 8 PIN 10K OHM X 4 ISO, 0.5%	
1	R9	60B1091000	RESISTOR MF RN55 100 OHM 1% T1 1/8W	
2	U2,15	52B00600	74LS10	
2	U4,20	52B00300	74LS04	
1	U17	51B11700	ROM/MICRO,BASIC,8052AH, 12MHz	
1	U8	51B11600	PROGRAMMABLE PERIPHERAL INTERFACE, P8255A-5	
1	U5	51B08200	RS232 DRIVER/RECEIVER,MAX232	
2	D5,6	50B04900	DIODE,SCHOTTKY,1N5819,40V,1A	
4	D1-4	50A00300	DIODE,1N4148,SIGNAL	
1	1	48D14300	PCB,CONTROLLER BOARD	D-599000
1	CN3	45B60400	HEADER, .2",TIN PLATED, MATES WITH 45B60300	
1	CN3	45B60300	TERMINAL BLOCK 12 CIRCUIT PCB .2" DEPLUGGABLE	
1	CN4	45B47200	HEADER 4 CIRCUIT MINI-FIT JR.	
1	CN9	45B47000	HEADER .100" CENTER 10 POSITION	
0	CN10	45B47000	HEADER .100" CENTER 10 POSITION	
1	CN1	45B46900	TERMINAL BLOCK 8 CIRCUIT PCB .2" 45 DEG ANGLE	
5	TP1-5	45B18100	TEST POINT W/COLLAR ,BLACK PCB	
1	CN8	45B09300	HEADER PCB .100"X.100" 2X10 20 CIRCUIT	
1	XU17	45B02600	SOCKET 40PIN DIP .6" PCB	
1	XU19	45B02500	SOCKET 28PIN DIP .6" PCB	
2.5"	W1_2,	44A01500	WIRE #22 AWG SOLID BUS, UNINSULATED, TINNED	
	W3_4,			
	U35-3 to			
	U35-6,			
	U42-3 to			
	U42-6			
6	U36-41	43B02700	RELAY,SOLID STATE,.5AMP	
0	U35,42	43B02700	RELAY,SOLID STATE,.5AMP	
1	BZ1	43B02600	PIEZOELECTRIC BUZZER	
2	L1,2	40B03200	CHOKE,100uH 125mA TOROID	
1	T1	40B01800	TRANSFORMER,TELEPHONE INTERCONNECT 600 OHM/1:1	
REF		30M17200-1	METHOD SHEET, S.A. CONTROLLER PCB	
2	BZ1	20SA12PS	SCREW, SS, #2-56 X 3/8", PAN HEAD SLOTTED	
2	BZ1	20NT1000	NUT, HEX, SS, #2-56	
4	BZ1	20W11000	WASHER, #2, INTERNAL STAR	
0		19A02800	LABEL, WHITE 1.00"X.50" POLYESTER	

PARTS LIST

SCHEMATIC P/N 300088
ARTWORK P/N 599000
ASSEMBLY P/N 300086
BILL OF MATERIAL 300086
USED ON MODEL 90A1 & 90A2

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MATERIAL
FINISH
DO NOT SCALE DRAWING

CONTRACT NO. 91E041

APPROVALS		DATE
DRAWN	CA ACAD	4-4-94
CHECKED	D. Gon	4-28-94
APPROVED	[illegible]	7-28-94
RELEASED	[illegible]	4-11-94

STERIS CORPORATION

S.A. CONTROLLER PCB

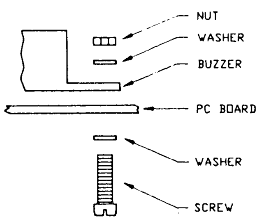
SIZE D | CODE IDENT NO. | MICRODIMENSIONS PART NO. 30D17200-1
STERIS PART NO. D-300086
SCALE NTS | STERIS | SHEET 1 OF 2

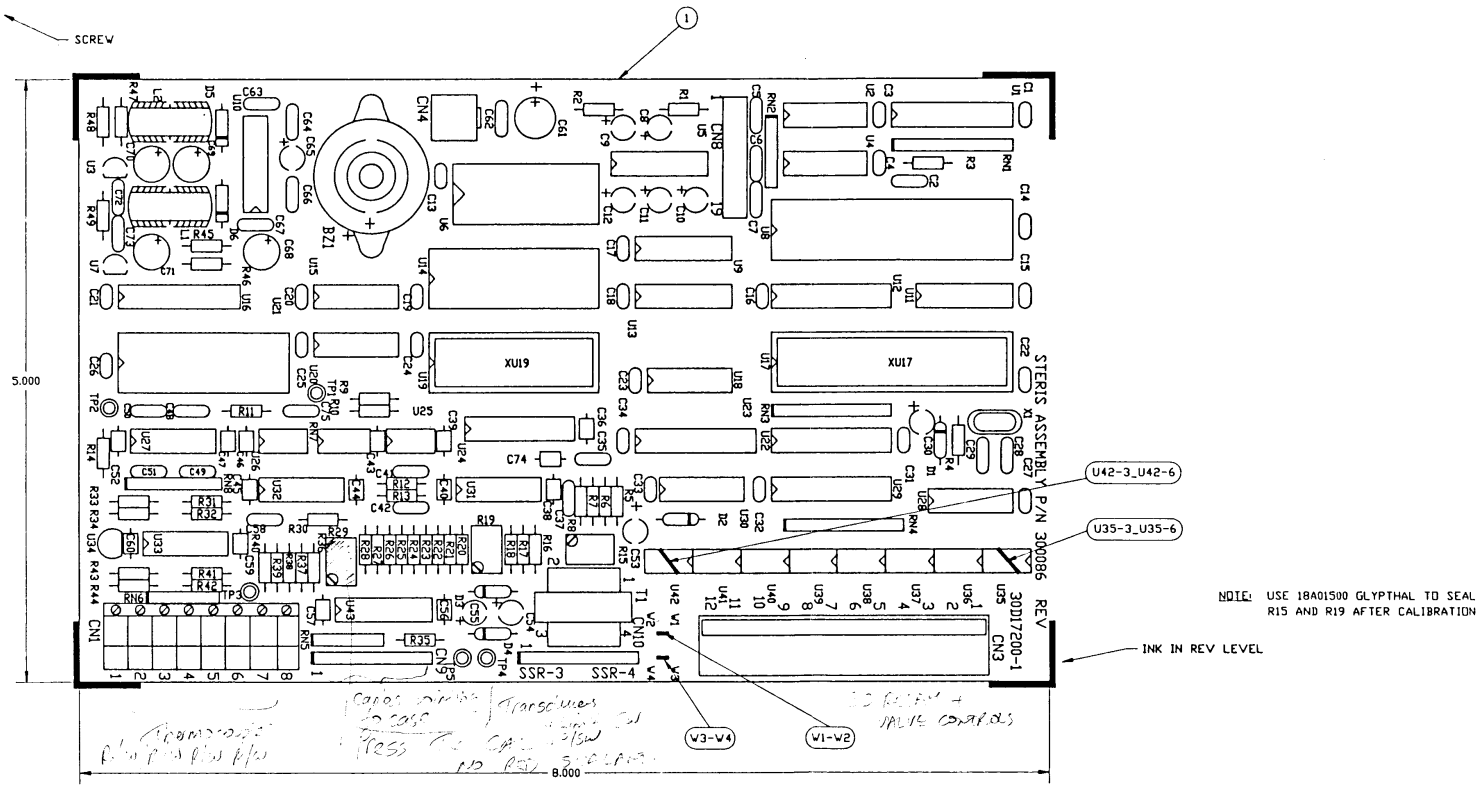
8 7 6 5 4 3 6.1 2 1

8	7	6	5	4	3	2	1

REVISIONS

ZONE	LTR	EO	ERO	DESCRIPTION	DATE	A[illegible]
	A			RELEASE FOR PRODUCTION REL. NO. 794		
	B		1342	ADD CAPACITOR C75	10/13/92	
	C		1393	C74,C75 ADDED TO BL	1/14/93	
	D		1407	CHANGED C74 TO 6100090104	2/17/93	
	E		1421	CHANGED 6031097503 TO 6033057503 & 6031091001 TO 6033051001	4/8/93	
	F	2691	1531	REPLACED 45347100 WITH 45360300 & 45360400 REPLACED 54000100 WITH 54010700	4-22-94	





NOTE: USE 18A01500 GLYPTHAL TO SEAL R15 AND R19 AFTER CALIBRATION

BOARD TO BE HANDLED AND LABELED PER PROCEDURE 600051.
WHEN SHIPPED, BOARDS MUST BE INDIVIDUALLY CUSHION WRAPPED OVER ANTISTATIC PROTECTIVE BAG TO PREVENT SHOCK OR CRUSH DAMAGE.

	QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	

PARTS LIST

NEXT ASSY	USED ON

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

CONTRACT NO. 91E041

APPROVALS		DATE
DRAWN	CA ACAD	4-4-94
CHECKED	D. Lyon	4-28-94
APPROVED	[illegible]	4-28-94
RELEASED	EO 2691	4-22-94

STERIS CORPORATION

S.A.
CONTROLLER PCB

SIZE	CODE IDENT NO.	MICRODIMENSIONS PART NO.
D		30D17200-1
		STERIS PART NO. D-300086

ZONE	LTR	EO	ERO	DESCRIPTION	DATE	APPROVED
	A			SEE SHEET 3 FOR REVISION LEVEL		

REVISIONS

	QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	
	3	RL3, 9	60B0040472	RESISTOR CF 4.7K OHM 1/4W 5%	
	1	R10	60B0040123	RESISTOR CF 12K OHM 1/4W 5%	
	1	R2	60B0040333	RESISTOR CF 33K OHM 1/4W 5%	
	5	R4,11, 14,17, 18	60B0040104	RESISTOR CF 100K OHM 1/4W 5%	
	2	R5,8	60B0040105	RESISTOR CF 1.0M OHM 1/4W 5%	
	5	RN1,2, 5-7	60B0500221	RESISTOR NET SIP 10 PIN 220 OHM X 9 BUSSED	
	2	RN3,4	60B0500102	RESISTOR NET SIP 10 PIN 1.0K OHM X 9 BUSSED	
	1	C2	61B0620222	CAP .0022UF 100V CERAMIC	
	1	C1	61B0650227	CAP 220UF 16V ALUM ELECT	
	4	C3-6	61B0890104	CAP .1UF 50V CERAMIC	
	REF		98A05600	INSPECTION REPORT 30D17300,30D17300-1	

	QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	
	1	R12	60B0040332	RESISTOR CF 3.3K OHM 1/4W 5%	
	2	R6,7	60B0040272	RESISTOR CF 2.7K OHM 1/4W 5%	
	3	R13,15, 16	60B0040391	RESISTOR CF 390 OHM 1/4W 5%	
	3	U8-10	55B07100	OPTO-COUPLER,CNY17-3	
	3	DS1-3	55B06800	LIGHT BAR,GREEN,HLMP-2550	
	6	DS4-8, 10	55B06700	LIGHT BAR,YELLOW,HLMP-2450	
	1	DS9	55B06600	LIGHT BAR,RED,HLMP-2350	
	2	U6,7	54B04600	COMPARATOR,LP311	
	2	U1,2	52B00500	7407	
	3	U3-5	50B04800	TRANSISTOR,QUAD 2222, NPN	
	4	D1-4	50A00300	DIODE,1N4148,SIGNAL	
	1	4	48D14200	PCB,DISPLAY/PRINTER BOARD	D-599001
	1	8	46B10900	SEIKO PRINTER INTERFACE PCB W/CABLE	A-300022
	1	CN3	45B47900	CONNECTOR FLAT FLEX CABLE 9 CIRCUIT .10"	
	1	CN2	45B47800	CABLE JUMPER .10" 5 COND,26AVG,2" LONG,GRAY	
	2	CN5,7	45B47700	HEADER .100" CENTER 9 POSITION	
	1	CN4	45B47600	HEADER .100" CENTER 15 POSITION	
	1	CN6	45B47500	HEADER .100" CENTER RIGHT ANGLE 5 CIRCUIT	
	10	XDS1-10	45B44100	SOCKET STRIP 8 POSITION	
	2	JB,D	45B16100	JUMPER TWO CIRCUIT	
	2	JA,C	45B10500	HEADER PCB .100"X.100" 1X3 3 CIRCUIT	
	1	CN1	45B09300	HEADER PCB .100"X.100" 2X10 20 CIRCUIT	
	1	SW1	42B02300	SWITCH, DIP, 4 POSITION, SEALED ROCKER	
	1	PTR	34B17200	PRINTER,SEIKO MTP-201-G166	B-500058
	REF		30M17300-1	METHOD SHEET, S.A. DISPLAY/PRINTER PCB	
	4	7	22A18900	SPACER,NYLON HEX 4-40X.625"	
	8	6	20WS2000	WASHER, #4, SPLIT	
	8	5	20SM21PS	SCREW, #4-40 X 1/4", PAN HEAD SLOTTED	
	2	3	20SM11PS	SCREW, #2-56 X 1/4", PAN HEAD SLOTTED	
	2	2	20WI1000	WASHER, #2, INTERNAL STAR	
	2	1	20NH1000	NUT, HEX, #2-56	

PARTS LIST

SCHEMATIC P/N 300089
ARTWORK P/N 599001
ASSEMBLY P/N 300085
BILL OF MATERIAL 300085
USED ON MODEL 90A1 & A2

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO. 91E041

APPROVALS		DATE
DRAWN	CA ACAD	4-4-94
CHECKED	D. Gu	4-28-94
APPROVED	[illegible]	4-28-94
RELEASED	EO [illegible]	4-29-94

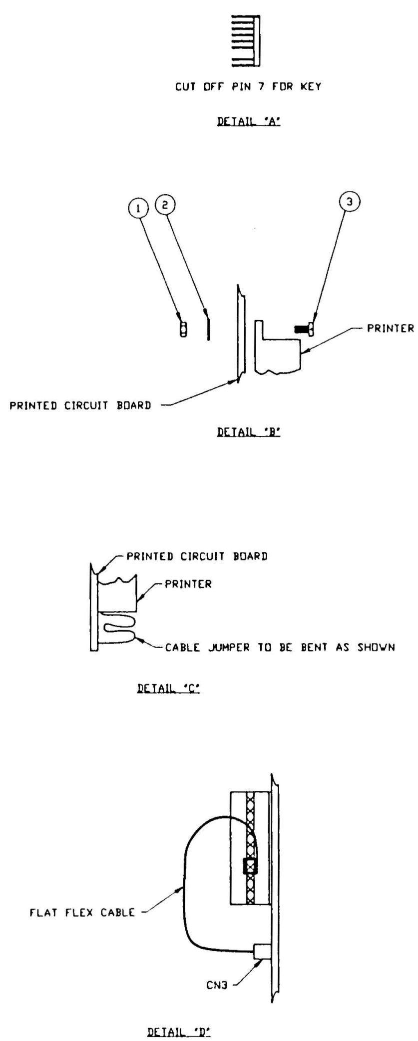
STERIS
CORPORATION

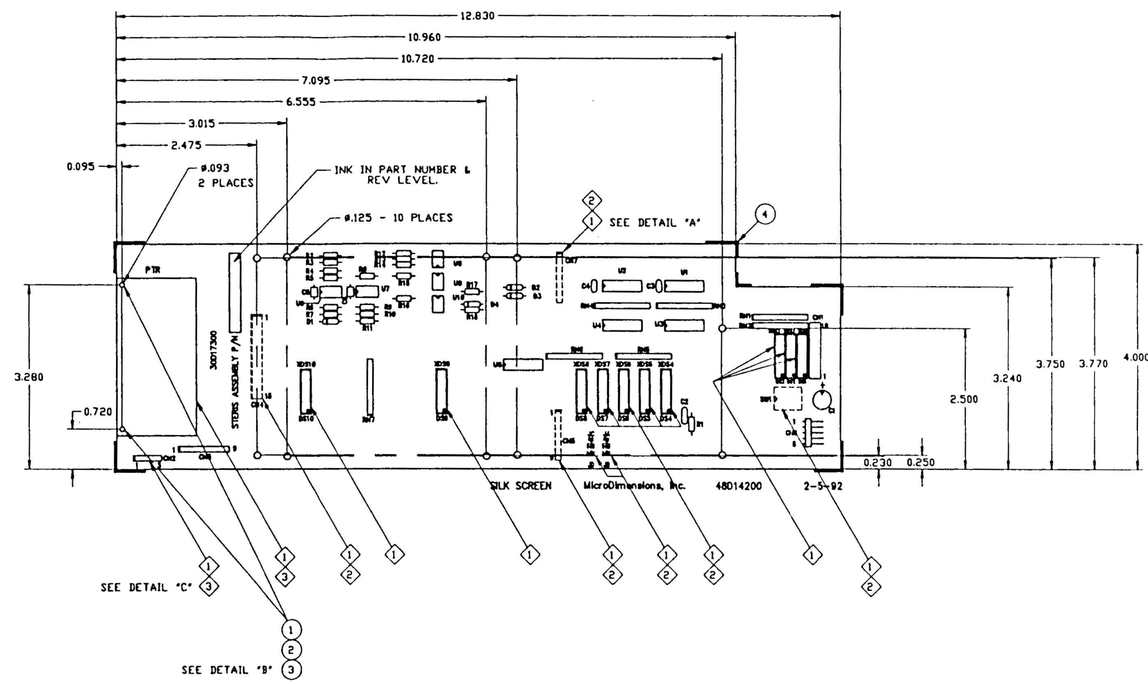
S.A. DISPLAY/PRINTER PCB

SIZE D | CODE IDENT NO. | MICRODIMENSIONS PART NO. 30D17300-1
STERIS PART NO D-300085

SCALE NTS | STERIS | SHEET 1 OF 3

ZONE	LTR	EO	ERO	REVISIONS DESCRIPTION	DATE	APPROVED
	A			SEE SHEET 3 FOR REVISION LEVEL		





NOTES:

1. INSTALL LEDS DS1 - DS10, CABLE JUMPER CN2, CN4, CN5, CN7, JA, JC, SW1, AND PRINTER PTR AFTER WAVE SOLDERING PRINTED CIRCUIT BOARD.
2. CN4, CN5, CN7, JA, JC, AND SW1 ARE INSTALLED ON THE SOLDER SIDE OF THE PRINTED CIRCUIT BOARD.
3. SOLDER CABLE JUMPER TO PRINTER FIRST USING ROSIN CORE SOLDER, THEN INSTALL PRINTER AND SOLDER CABLE JUMPER TO PRINTED CIRCUIT BOARD USING ROSIN CORE SOLDER. DO NOT CLEAN THESE CONNECTIONS.
   CONNECT FLAT FLEX CABLE FROM PRINTER TO CN3 AS SHOWN IN DETAIL 'D'. BEND, BUT DO NOT TWIST OR FOLD THE FLAT FLEX CABLE.
4. REMOVE 77 IN PART NUMBER 300077 AND INK IN 85 FOR PART NUMBER 300085.

BOARDS TO BE HANDLED AND LABELED PER PROCEDURE 600051.
WHEN SHIPPED,BOARDS MUST BE INDIVIDUALLY CUSHION WRAPPED OVER ANTISTATIC PROTECTIVE BAG TO PREVENT SHOCK OR CRUSH DAMAGE.

	QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	

PARTS LIST

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO. 91E041

APPROVALS		DATE
DRAWN	CA ACAD	4-4-94
CHECKED	D. Lyon	4-28-94
APPROVED		4-27-94
RELEASED	EO 3491	4-27-94

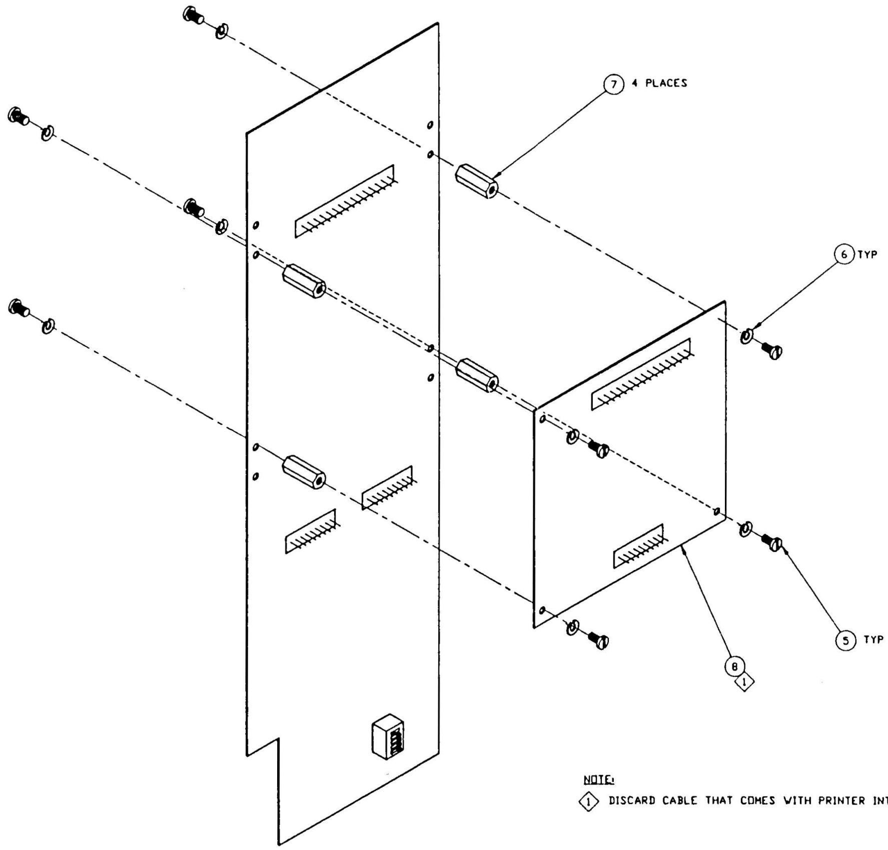
STERIS CORPORATION

S.A. DISPLAY/PRINTER PCB

SIZE	CODE IDENT NO.	MICRODIMENSIONS PART NO.
D		30D17300-1
		STERIS PART NO. D-300085

SCALE NTS | STERIS | SHEET 2 OF 3

REVISIONS						
ZONE	LTR	EO	ERO	DESCRIPTION	DATE	APPROVED
	1			PRELIMINARY RELEASE NO. 784	4-15-94	
	A	[illegible]	[illegible]	REVISED FOR CONSISTENCY	[illegible]	[illegible]



NOTE:

1. DISCARD CABLE THAT COMES WITH PRINTER INTERFACE BOARD.

	QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

CONTRACT NO. 91E041

APPROVALS		DATE
DRAWN	CA ACAD	4-4-94
CHECKED	[illegible]	4-28-94
APPROVED	[illegible]	4-28-94
RELEASED	EO [illegible]	[illegible]

STERIS CORPORATION

S.A. DISPLAY/PRINTER PCB

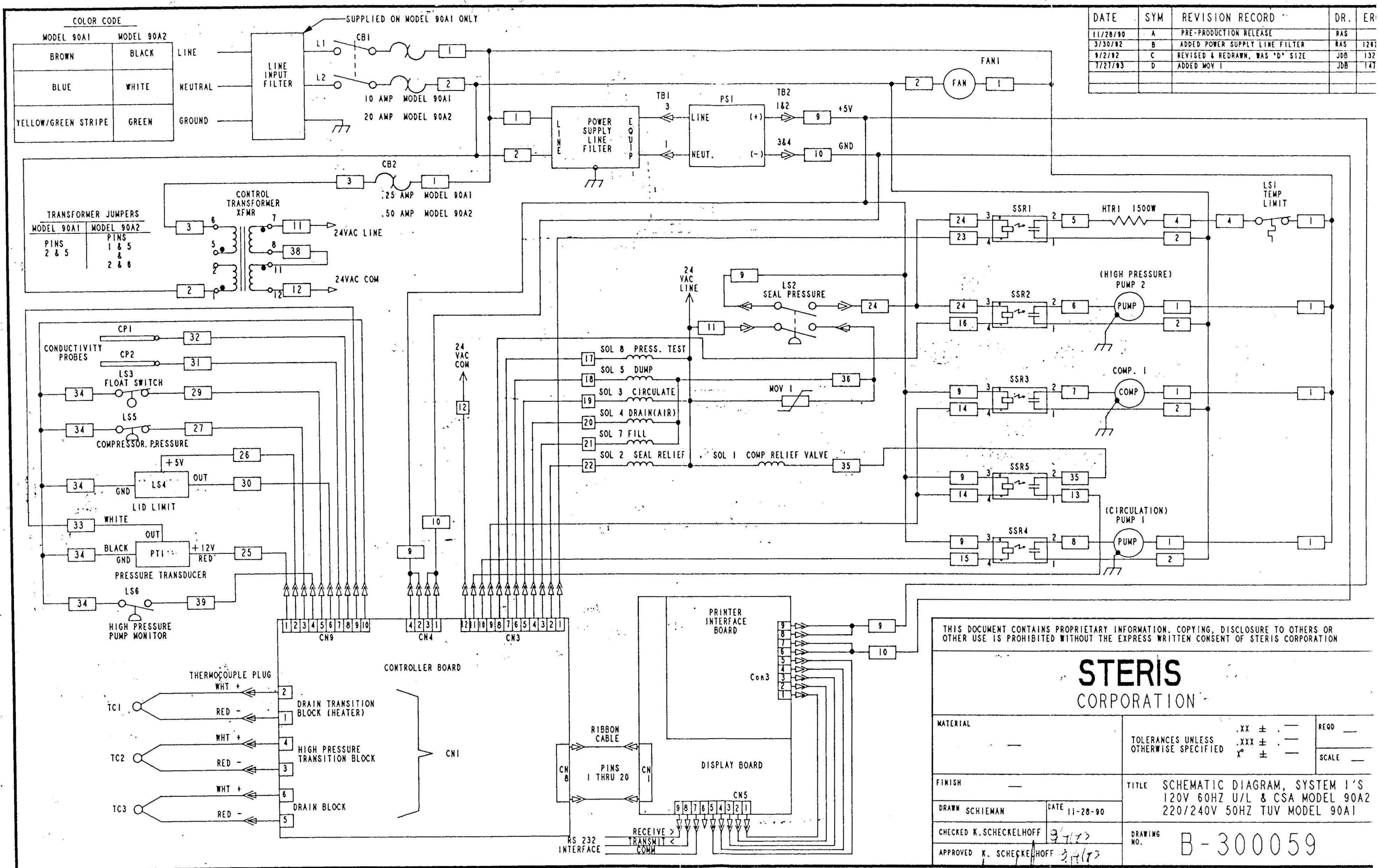
SIZE D | CODE IDENT NO. | MICRODIMENSIONS PART NO 30D17300-1 | STERIS PART NO D-300085

SCALE NTS | STERIS | SHEET 3 OF 3

NEXT ASSY	USED ON

APPLICATION

DO NOT SCALE DRAWING



DATE	SYM	REVISION RECORD	DR.	ER
11/28/90	A	PRE-PRODUCTION RELEASE	RAS	
3/30/92	B	ADDED POWER SUPPLY LINE FILTER	RAS	12[illegible]
9/2/92	C	REVISED & REDRAWN, WAS "D" SIZE	JDB	132
7/27/93	D	ADDED MOV 1	JDB	147

STERIS
CORPORATION

MATERIAL —	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .— .XXX ± .— X° ± —
FINISH —	REQD — SCALE —
DRAWN SCHIEMAN DATE 11-28-90	TITLE SCHEMATIC DIAGRAM, SYSTEM 1'S 120V 60HZ U/L & CSA MODEL 90A2 220/240V 50HZ TUV MODEL 90A1
CHECKED K.SCHECKELHOFF 9/7/93	DRAWING NO. B-300059
APPROVED K. SCHECKELHOFF 9/7/93	

A. Wil 8/4/93

6.6

NOTES:

1. EACH INDIVIDUAL SEIKO PRINT HEAD IS RANKED A, B, OR C. INSTALL JUMPER BASED ON PRINT HEAD USED:

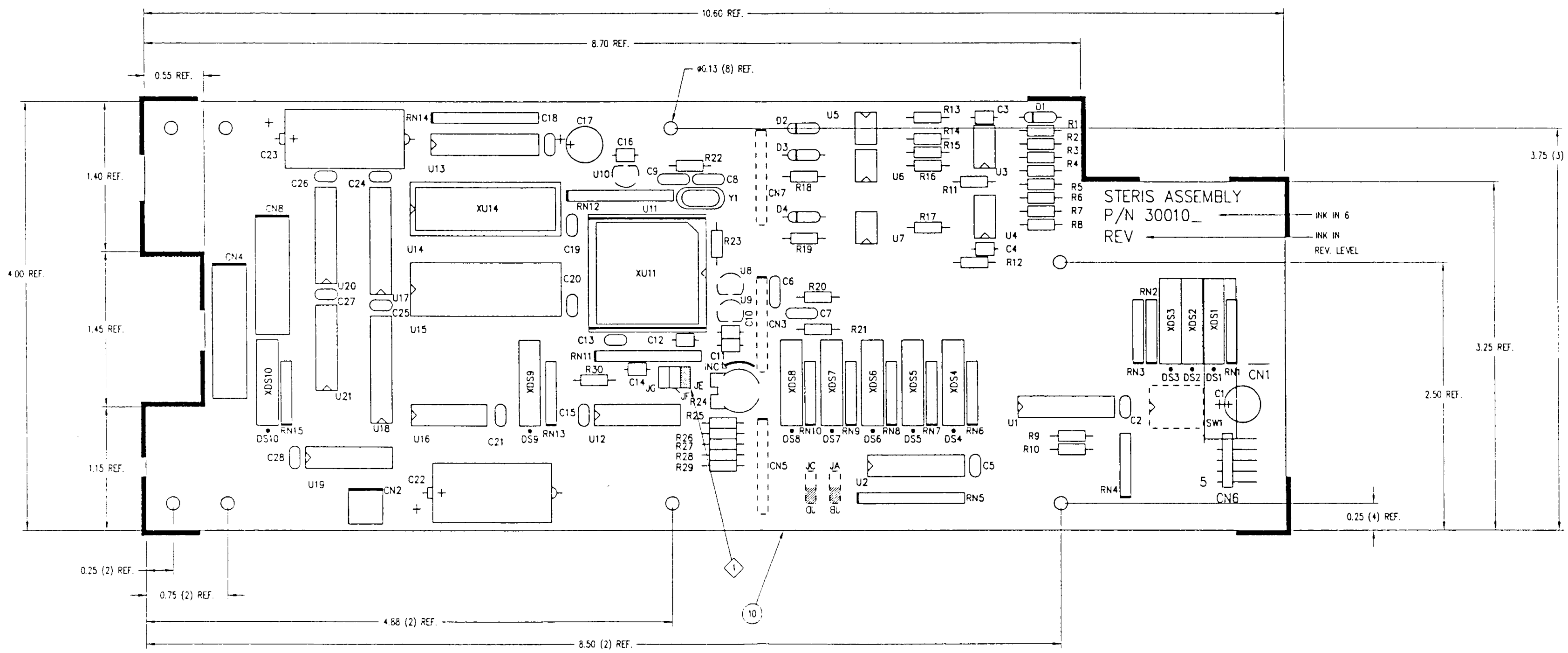
RANK	JUMPER
A	JG
B	JE
C	JF

E

2. DOCUMENT 600167, FIELD SERVICE REPLACEMENT PROCEDURE MUST BE SHIPPED WITH EACH P.C.B.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	ECO #1744	7-26-95	RCS
	B	CORRECTED VALUE OF C2-C28 FROM .01uF, CHANGED C-400596 TO 400628, ADDED ADDITIONAL SOURCES TO U13, U17-18 & ITEM 9 ECO #1922	10-5-95	RCS
	C	CHANGED ITEM 3 FROM PAN HEAD SCREWS TO FLAT HEAD SCREWS - REMOVED TI LM358P & NATIONAL LM358N AS SOURCES FOR U1,2&20 - CORRECTED RESISTOR 100K FROM R9 TO R19 - ECO #2038	12-19-95	RCS
	D	SHOW CORRECT LIGHT BAR DS8, DS9 COLOR DESIGNATION ON SHT. 3 OF 3 ECO# 3083	3-13-96	JAR
	E	ADDED NOTE 2 CALLING OUT FIELD SERVICE REPLACEMENT PROCEDURE & ADDED DWG SIZE TO P/N ECO#3400	6/■/96	



SILK SCREEN STERIS 556005 REV A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/16, DECIMALS .XX ± 0.03, .XXX ± 0.015, ANGLES ±1°	STERIS Corporation Mentor, Ohio		
	DRAWN BY CA 3-24-95	S.A. PCB DISPLAY W/SEIKO PRINTER	
	CHECKED BY SAB 7-26-95		
	APPROVED BY RCS 7-26-95	MATERIAL N/A	FINISH N/A
	REVISED SKE 6-12-96		COLOR N/A
	SIZE D / PROJECT NO 94E064	PART NO D-300106	
DO NOT SCALE DRAWING	SCALE 2=1		SHEET 1 OF 3

6.7

PARTS LIST / IDENTIFICATION: 9ØA1/9ØA2

INDEX

Date	Sym	Revision Record	By	Ck
[illegible]	5	PREPRODUCTION		
[illegible]	A	PRODUCTION RELEASE		
[illegible]	B	MINOR ADDITIONS / CLARIFICATION ADDED PRESSURE SW DETAIL		
[illegible]/93	C	UPDATED TO INCLUDE DEVIATIONS WRITTEN AGAINST THIS ASSEM. INCLUDING E PROMS, [illegible] RELAYS, [illegible]	RAS	
[illegible]/94	D	UPDATED TO INCLUDE DEVIATIONS WRITTEN AGAINST THE ASSEM. INCLUDING TUBING LENGTHS, UPPER LEVEL ASSEMBLIES, RED VALVE SHIMS, BRANCH TEE, LOCTITE, SUPERLIFE LABEL AND 45° HOSE BARB FOR THE ANTI-SIPHON.	RAS	
[illegible]/94	E	UPDATED TO INCLUDE DEVIATIONS WRITTEN AGAINST THIS ASSEM. REVISED "PICK" SYMBOLS AND EXPLANATION. ADDED SPANISH MODEL 90A1, MISC. CLARIFICATION	RAS	
[illegible]/95	F	ADDED AUSTRALIAN VERSION MODEL 90A1. CONTROL PNL. IS COMMON PART, MEMBRANE PANELS ARE SEPARATE ITEMS. REVISED RIBBON CABLE AND DOOR SENSOR PCB. ADDED MISC. CLARIFICATION. ECO# [illegible]	RAS	

FRAME ASSEMBLY
EUROPEAN, UL & CSA
COMMON PARTS B/M 200169

Rev	ITEM	PART NO.	QTY.	DESCRIPTION
	1	R-100527	1	FRAME WELDMENT
E	2	A-400037	66	MOUNT, ADHESIVE BACKED
	3	B-450402	2	FLEX GROMMET 2 9/16 LG.
	4	B-450404	1	FLEX GROMMET 2 15/16 LG.
	5	B-450403	1	FLEX GROMMET 4 7/8 LG.
	6	B-450407	1	FLEX GROMMET 6 1/4 LG.
	7	B-450405	1	FLEX GROMMET 4 7/16 LG.
	8	B-450406	1	FLEX GROMMET 4 15/16 LG.
	9	B-450408	1	FLEX GROMMET 2 1/8 LG.
F	10	B-200211	1	CONTROL PANEL ASSY.
	11	B-500059	4	SOLID STATE RELAY
	12	B-200154	1	SINGLE INLET WATER VALVE
	13	D-200160	1	AIR MANIFOLD ASSEMBLY
	14	D-200119	1	STERILE FILTER ASSEMBLY
	15	B-500066	1	ISOLATION TRANSFORMER
	16	A-200055	1	GAS CYLINDER BRACKET
	17	C-200042	1	FLOAT VALVE ASSEMBLY
	18	D-200070	1	DRIP PAN ASSEMBLY
	19	D-200095	1	LATCH ASSEMBLY
	20	D-200063	1	DRAIN BLOCK ASSEMBLY
	21	C-200137	1	HEATER HOUSING ASSEMBLY
	22	C-200066	1	PINCH VALVE BRANCH ASSY.
	23	C-200155	1	CROSS BLOCK ASSEMBLY
	24	B-200173	1	BULKHEAD CONNECTOR ASSY.
	25	B-200179	1	GUIDE TUBE ASSEMBLY
	26	B-200180	1	QUICK DISCONNECT AIR LINE
	27	B-200271	1	PRESSURE SWITCH ASSEMBLY
	28	B-100523	1	PUMP BRACKET
	29	A-100590	1	CUSHION, PUMP BRACKET
F	30	B-300113	1	DOOR SENSOR PCB
E	31	A-400001	A/R	CABLE TIE
	32	R-300058	1	WIRE HARNESS, LOW VOLTAGE
	33	R-300064	1	WIRE HARNESS, HIGH VOLTAGE
	34	B-300065	1	CABLE ASSY., HEATER TO GND
	35	B-300068	1	CABLE ASSY., PUMP TO GND
	36	B-300069	1	CABLE ASSY., COMP TO GND
	37	B-300074	1	CABLE ASSY., RS. TO FILTER
	38	A-400277	4	STUD, PLATE MOUNTING
	39	A-100119	1	HEATER COVER
	40	B-200213	1	CHAMBER SEAL
	41	B-100135	2	RETAINER, SHORT SEAL
	42	B-100136	2	RETAINER, LONG SEAL
	43	A-100596	1	GASKET, DRAIN
	44	A-100359	1	GASKET, HI PRESSURE
E	45	A-100681	1	GASKET, HEATER ELEMENT
	46	C-100614	1	TRANSITION BLOCK, DRAIN
	47	C-100615	1	TRANSITION BLOCK, HI-PRESS.
	48	B-100038	2	QD POST
	49	C-100503	1	QD POST, HI-PRESS
	50			
	51	B-450600	2	O-RING
	52	B-450605	2	O-RING
	53	B-450609	1	O-RING
	54	B-450612	1	O-RING
	55			
	56	B-100373	1	STUB TUBE, FILTER RETURN
	57	A-400366	1	MALE CONNECTOR
	58	A-400088	1	UNION TEE
	59	A-400375	1	MALE CONNECTOR
	60	A-400141	1	MALE CONNECTOR
	61	A-400087	1	LONG NIPPLE
	62	A-400143	2	MALE CONNECTOR
	63			
	64	A-100491	2	CONDUCTIVITY PROBE
	65	A-500019	1	THERMOSTAT, MAN. RESET

Rev	ITEM	PART NO.	QTY.	DESCRIPTION
	66	A-400289	2	GROUND SYMBOL
	67			
	68	A-400060	2	VALVE BODY
E	69	A-400063	2	VALVE SLEEVE
	70	A-400426	1	MALE BRANCH TEE
	71	A-400219	1	CHECK VALVE
	72	A-400427	1	HOSE BARB, 45°
	73	A-100459	1	TUBING CONNECTOR, MODIFIED
	74			
	75	B-451800	4	SCREW, 6-32 X 3/8 FLAT HD.
	76	B-451802	10	SCREW, 6-32 X 3/8 BUT. HD.
	77	B-451808	4	SCREW, 6-32 X 1/4 BUT. HD.
	78	B 453004	4	NUT, NO. 6-32 HEX
	79	B-453001	10	NUT, NO. 6-32 KEPS
	80	B-450205	22	WASHER, NO. 6 FLAT
	81	B-450213	6	WASHER, NO. 6 LOCK
	82	B-450203	8	WASHER, NO. 8 FLAT
	83	B-450215	2	WASHER, NO. 8 LOCK
	84	B-451914	2	SCREW 8-32 X 3/8
	85	B-451906	4	SCREW, 8-32 X 3/8 FLAT HD.
	86	B-452007	4	SCREW, 10-32 X 1.00 BUT. HD.
	87	B-452000	4	SCREW, 10-32 X 1/2 SOC. CAP.
	88	B-452001	11	SCREW, 10-32 X 1/2 BUT. HD.
	89	B-452003	10	SCREW, 10-32 X 3/8 BUT. HD.
	90	B-452004	12	SCREW, 10-32 X 1/2 FLAT HD.
	91	B 452010	6	SCREW, 10-32 X 5/8 BUT. HD.
	92	B-453005	5	NUT, HEX NO. 10-32
	93			
	94	B-450201	25	WASHER, NO. 10 LOCK
	95	B-450211	37	WASHER, NO. 10 FLAT 7/16 OD
	96	B-450221	3	WASHER, INT/EXT LOCK
	97			
	98	B-452100	8	SCREW, 1/4-20 X 1/2 BUT. HD.
	99	B-462105	4	SCREW, 1/4-20 X 3/8 BUT. HD.
	100			
	101	B-450207	12	WASHER, 1/4 LOCK
	102	B-450208	12	WASHER, 1/4 FLAT
	103			
	104	B-453006	4	NUT, 1/4-20 HEX
	105	B-452202	6	SCREW, 5/16-18 X 7/8 SOC CAP
	106			
	107	B-450209	6	WASHER, 5/16 LOCK
	108	B-450210	6	WASHER, 5/16 FLAT
	109	B-450216	8	WASHER, NO. 8 INT. LOCK
	110	B-450214	8	WASHER, NO. 8 EXT. LOCK
	111			
	112	B-450224	2	WASHER, FLAT
	113	B-450223	1	WASHER, FLAT
	114	B-450807	1	ADAPTER 1/2 NPT X 3/4 HOSE
	115			
	116	B-450100	4	ROLL PIN
	117	B-450400	8	GROMMET, 1/2 OD x 3/16 ID
	118	A-400197	1	STEEL STRIKE
	119	B-451907	1	SCREW, SET 8-32 X 1/2
	120	A-400034	A/R	LOCTITE 242
	121	A-400245	8	FOAM PLUG
	122	A-400134	A/R	ADHESIVE CA40H
	123	A-400150	A/R	TEFLON TAPE 1/2" WIDE
	124	A-400033	A/R	GREASE, HIGH VACUUM
	125	A-400036	A/R	THREAD SEALANT
	126	A-400259	A/R	LOCTITE, RC/609
	127	A-400263	A/R	LOCTITE, PRIMER T
	128	A-400035	A/R	LUBRICANT, O-RING
	129	A-400235	A/R	ADHESIVE, LOCTITE 222
	130	A-400032	A/R	ANTI-SEIZE COMPOUND

Rev	ITEM	PART NO.	QTY.	DESCRIPTION	Rev
	131	A-400108	2	WIRE MARKER NO. 1	
	132	A-400109	2	WIRE MARKER NO. 2	
	133	A-400110	2	WIRE MARKER NO. 3	
	134				
	135				
	136	D-300086	1	CONTROLLER RC, BOARD	
	137				
	138	B-100520	3	THERMOCOUPLE PLUG	
	139				
	140	A-100745	A/R	SHIM	
	141				
	142				
	143	B-450507	8	HOSE CLAMP, NO. 8	F
	144	B-450510	5	HOSE CLAMP, NO. 6	F
	145	B-450509	2	HOSE CLAMP, NO. 24	F
	146	B-450508	2	HOSE CLAMP, NO. 12	F
	147				
	148				
	149				
E	150	A-613007	1	TUBING, SILICONE 1/4 ID x 6 3/4	
	151				
	152				
	153	A-613000	1	HOSE, 3/8 ID X 25" LG.	
	154	A-613002	1	HOSE, 7/8 ID X 1 1/4" LG.	
	155	A-613003	1	HOSE, 1 1/4 ID X 1 7/8" LG.	
	156	A-613001	1	HOSE, 1/2 ID X 6 1/2" LG.	
	157	A-613000	1	HOSE, 3/8 ID X 22 1/2 LG.	
	158	A-613001	1	HOSE, 1/2 ID X 20 1/2 LG.	
	159	A-613001	1	HOSE, 1/2 ID X 21 1/2 LG.	
	160	A-613001	1	HOSE, 1/2 ID X 2 1/2 LG.	
	161	B-451000	1	RETAINING RING	
	162	D-200228	1	LID ASSEMBLY	
	163	B-100063	1	CLEVIS PIN	
	164	B-200056	1	GAS SPRING CYLINDER	
	165	B-100356	2	HINGE SHIM	
	166	A-100362	2	LATCH SHIM .030 THK.	
	167	A-400059	9 1/4"	FOAM TAPE	
	168	D-100192	1	LOWER SHROUD	
	169	A-400208	4	BUMPER	
	170	A-400069	2	CAPPLUGS	
	171	A-100329	3	DRAIN BLOCK SHIM	
	172	A-100633	2	LATCH SHIM .016 THK.	
	173	A-100769	A/R	LATCH SHIM .025 THK.	
	174	A-100770	A/R	LATCH SHIM .008 THK.	
	175	A-400144	2	CLOSURE, PULL TAB	
	176	A-400145	1	ROUND CYLINDRICAL CAP	
	177				
	178				
	179	A-400055	1	HEX PLUG	
	180				
	181	B-100717	1	ACCESS PANEL (1 RELAY)	
	182	B-100718	1	ACCESS PANEL (3 RELAYS)	
	183				
	184				
	185				
	186	A-613027	15"	TUBING, POLYETHYLENE	
	187				
	188	A-613009	2	TUBING, POLYETHYLENE 8"	
	189	A-613009	2	TUBING, POLYETHYLENE 12"	
	190	A-613009	1	TUBING, POLYETHYLENE 19.5"	
	191	A-613009	1	TUBING, POLYETHYLENE 15"	
	192	A-613009	1	TUBING POLYETHYLENE 16"	
	193				
	194				
	195	A-400367	A/R	TEFLON TAPE 1/4" WIDE	

ENGINEERING CONSIDERATIONS

PRODUCTS COVERED:

- STERILIZER MODEL 90A1
  220-240V~ 50Hz 7.0 A
- STERILIZER, MODEL 90A2
  110-120V~ 60Hz 15.0 A

THE FOLLOWING DRAWINGS HAVE BEEN STRUCTURED TO ALLOW ASSEMBLY OF SEVERAL VERSIONS OF THE SYSTEM 1™ PROCESSOR.
THE BILL OF MATERIAL FOR ANY GIVEN PROCESSOR CONSISTS OF THE COMMON BILL OF MATERIALS PLUS THE PART NUMBER SPECIFIC BILL OF MATERIALS.
IN THE FOLLOWING DRAWINGS, COMPONENTS FROM THE PART NUMBER SPECIFIC BILL OF MATERIALS ARE IDENTIFIED BY AN OVAL WITH THE WORD "PICK" LOCATED INSIDE AS WELL AS THE ITEM FROM WHICH TO CHOOSE.

EXAMPLE:

PICK 2A, 2B, 2C ETC. → POINTS TO ITEM

THEREFORE:

TO BUILD A GERMAN UNIT
(B/M 200186)
PICK —— 2A

TO BUILD A FRENCH UNIT
(B/M 200239)
PICK —— 26

TO BUILD AN ITALIAN UNIT
B/M 200238
PICK —— 2E

TO BUILD AN ENGLISH 110-120V UNIT
(B/M 200187)
PICK —— 2B

THE BILLS OF MATERIAL ARE ALSO STRUCTURED IN SUCH A MANOR THAT THE ACTUAL "PICK" IS MADE AT THE CATALOG NUMBER LEVEL. AN ASSEMBLER WILL NEVER MAKE A PICK AS CORRECT COMPONENTS WILL BE PRESENTED WITH EACH JOB PULL.

EXAMPLE:

YOU ARE BUILDING A	DESCRIPTION
CATALOG NUMBER P1000	STERIS SYSTEM 1™ PROCESSOR PACKAGE ENGLISH LANGUAGE 110 120 VOLT - 60Hz

ENGINEERING BILL OF MATERIAL 1000 CONTAINS ALL THE REQUIRED COMPONENTS INCLUDING LANGUAGE SPECIFIC LABELS, ACCESSORIES AND PACKAGING TO ASSEMBLE ONE PROCESSOR COMPLETELY PACKAGED READY FOR SHIPMENT.

CATALOG NUMBER P1000 B/M 1000
- B/M 10000
  - B/M 200169 COMMON PARTS AND ASSEMBLY DWG.
  - B/M 200187 ELECTRONICS AND LABELS
- STANDARD ACCESSORIES AND PACKAGING LOCATED ON B/M 1000

NOTES

1. TEST IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
   ALL MODEL 90A1 STERILIZERS PROCEDURE 600063
   ALL MODEL 90A2 STERILIZERS PROCEDURE 600064

2. UNLESS OTHERWISE SPECIFIED:
   WIRING DIAGRAM IS B-300059
   FLUID SCHEMATIC IS B-100387
   ASSEMBLY METHOD SHEET IS M200169
   COMMUNICATION LINK IS P/N B-300080
   FINAL PREPARATION PROCEDURE IS M80
   90A1 MANUFACTURING CHECKLIST - 800042
   90A2 MANUFACTURING CHECKLIST - 800041

REVISIONS BY SHEET №

REV \ SHT	1	2	3	4	5	6	7	8
5	5	5	5	5	5	5	5	—
A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	B	C
D	D	D	D	D	D	D	D	D
E	E	E	E	E	E	E	E	E
F	F	F	F	F	F	F	F	F

CERTIFICATIONS

MODEL 90A1 STERILIZER
TUV GS CERTIFICATE --- FILE № C9071231.01

MODEL 90A2 STERILIZER
UL LISTED ---------- FILE № E116271
CSA CERTIFIED ------ FILE № LR92287

STERIS CORPORATION

MATERIAL: LISTED
SCALE: 1/2
TITLE: FRAME ASSEMBLY MODEL 90
DRAWING NO. D-200169
SHEET 1 OF 8

B/M 200186
GERMAN 220-240 VOLT 50 Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1A	D-200184	1	ELECTRONICS ENCLOSURE
2A	B-200157	1	PISTON COMPRESSOR
3A	B-500067	1	CIRCUIT BREAKER, 10 AMP
4A	B-500075	1	CIRCUIT BREAKER, .25 AMP
5A	B-200183	1	CIRCULATION PUMP
6A	B-500107	1	HEATER ELEMENT
(F) 7A	D-100509	1	MEMBRANE PANEL
(F) 8A	B-100539	1	LABEL, FLAMMABLE
9A	B-300098	1	E PROM, PROGRAMMED
10A	B-200156	1	HIGH PRESSURE PUMP
11A			RESERVED
12A			
13A			
14A	A-400001	2	CABLE TIE
15A	B-500079	1	LINE FILTER
16A	A-200162	1	ADAPTER PLATE ASSEM.
17A	B-451603	2	SCREW, 4-40 x 3/8 FLAT HD.
18A	A-400388	4"	HEAT SHRINK TUBING
19A	A-300070	1	SERIES JUMPER
20A	A-400324	1	LABEL, GS MARK
21A	B-300099	1	CABLE ASSEMBLY (L1)
22A	B-300100	1	CABLE ASSEMBLY (L2)
23A	A-100533	1	LABEL, PRE-IMMERSION
24A	A-100585	1	LABEL, IF LEAK OCCURS
25A	B-100537	2	LABEL, SERVICING
26A	B-100538	1	LABEL, FUSE REPLACE
27A			
28A	A-400295	1	LABEL, DRAIN
29A	A-400296	1	LABEL, WATER INLET
30A	B-100546	1	SERIAL NUMBER TAG

USED ON B/M 1006 MODEL 90A1

B/M 200231
ENGLISH 220-240 VOLT 50 Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1C	D-200184	1	ELECTRONICS ENCLOSURE
2C	B-200157	1	PISTON COMPRESSOR
3C	B-500067	1	CIRCUIT BREAKER, 10 AMP
4C	B-500075	1	CIRCUIT BREAKER .25 AMP
5C	B-200183	1	CIRCULATION PUMP
6C	B-500107	1	HEATER ELEMENT
(F) 7C	D-100636	1	MEMBRANE PANEL
(F) 8C	B-400203	1	LABEL, FLAMMABLE
9C	B-300095	1	E PROM, PROGRAMMED
10C	B-200156	1	HIGH PRESSURE PUMP
11C	A-100756	1	LABEL, SUPERLIFE FILTER
12C			
13C			
14C	A-400001	2	CABLE TIE
15C	B-500079	1	LINE FILTER
16C	A-200162	1	ADAPTER PLATE ASSEM.
17C	B-451603	2	SCREW, 4-40 x 3/8 FLAT HD.
18C	A-400388	4"	HEAT SHRINK TUBING
19C	A-300070	1	SERIES JUMPER
20C	A 400324	1	LABEL, GS MARK
21C	B-300099	1	CABLE ASSEMBLY (L1)
22C	B-300100	1	CABLE ASSEMBLY (L2)
23C	A-100427	1	LABEL, PRE-IMMERSION
24C	A-100637	1	LABEL, IF LEAK OCCURS
25C	B-400201	2	LABEL, SERVICING
26C	A-400202	1	LABEL, FUSE REPLACE
27C			
28C	A-400295	1	LABEL, DRAIN
29C	A-400296	1	LABEL, WATER INLET
30C	B-100546	1	SERIAL NUMBER TAG

USED ON B/M 1003 MODEL 90A1

B/M 200238
ITALIAN 220-240 VOLT 50Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1E	D-200184	1	ELECTRONICS ENCLOSURE
2E	B-200157	1	PISTON COMPRESSOR
3E	B-500067	1	CIRCUIT BREAKER, 10 AMP
4E	B-500075	1	CIRCUIT BREAKER, .25 AMP
5E	B-200183	1	CIRCULATION PUMP
6E	B-500107	1	HEATER ELEMENT
(F) 7E	D-100660	1	MEMBRANE PANEL
(F) 8E	B-100665	1	LABEL, FLAMMABLE
9E	B-300096	1	E PROM, PROGRAMMED
10E	B-200156	1	HIGH PRESSURE PUMP
11E			RESERVED
12E			
13E			
14E	A-400001	2	CABLE TIE
15E	B-500079	1	LINE FILTER
16E	A-200162	1	ADAPTER PLATE ASSEM.
17E	B-451603	2	SCREW, 4-40 x 3/8 FLAT HD.
18E	A-400388	4"	HEAT SHRINK TUBING
19E	A-300070	1	SERIES JUMPER
20E	A-400324	1	LABEL, GS MARK
21E	B-300099	1	CABLE ASSEMBLY (L1)
22E	B-300100	1	CABLE ASSEMBLY (L2)
23E	A-100671	1	LABEL, PRE-IMMERSION
24E	B-100658	1	LABEL, IF LEAK OCCURS
25E	B-100663	2	LABEL, SERVICING
26E	B-100661	1	LABEL, FUSE REPLACE
27E			
28E	A-400295	1	LABEL, DRAIN
29E	A-400296	1	LABEL, WATER INLET
30E	B-100546	1	SERIAL NUMBER TAG

USED ON B/M 1005 MODEL 90A1

B/M 200239
FRENCH 220-240 VOLT 50Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1G	D-200184	1	ELECTRONICS ENCLOSURE
2G	B-200157	1	PISTON COMPRESSOR
3G	B-500067	1	CIRCUIT BREAKER, 10 AMP
4G	B-500075	1	CIRCUIT BREAKER, .25 AMP
5G	B-200183	1	CIRCULATION PUMP
6G	B-500107	1	HEATER ELEMENT
(F) 7G	D-100510	1	MEMBRANE PANEL
(F) 8G	B-100666	1	LABEL, FLAMMABLE
9G	B-300097	1	E PROM, PROGRAMMED
10G	B-200156	1	HIGH PRESSURE PUMP
11G			RESERVED
12G			
13G			
14G	A-400001	2	CABLE TIE
15G	B-500079	1	LINE FILTER
16G	A-200162	1	ADAPTER PLATE ASSEM.
17G	B-451603	2	SCREW, 4-40 x 3/8 FLAT HD.
18G	A-400388	4	HEAT SHRINK TUBING
19G	A-300070	1	SERIES JUMPER
20G	A-400324	1	LABEL, GS MARK
21G	B-300099	1	CABLE ASSEMBLY (L1)
22G	B-300100	1	CABLE ASSEMBLY (L2)
23G	A-100672	1	LABEL, PRE-IMMERSION
24G	B-100659	1	LABEL, IF LEAK OCCURS
25G	B-100664	2	LABEL, SERVICING
26G	B-100662	1	LABEL, FUSE REPLACE
27G			
28G	A-400295	1	LABEL, DRAIN
29G	A-400296	1	LABEL, WATER INLET
30G	B-100546	1	SERIAL NUMBER TAG

USED ON B/M 1004 MODEL 90A1

B/M 200187
UL & CSA 110-120 VOLT 60 Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1B	D-200185	1	ELECTRONICS ENCLOSURE
2B	B-200175	1	PISTON COMPRESSOR
3B	B-500081	1	CIRCUIT BREAKER, 20 AMP
4B	B-500078	1	CIRCUIT BREAKER, .50 AMP
5B	B-200049	1	CIRCULATION PUMP
6B	B-500106	1	HEATER ELEMENT
(F) 7B	D-100636	1	MEMBRANE PANEL
(F) 8B	B-400203	1	LABEL, FLAMMABLE
9B	B-300091	1	E PROM, PROGRAMMED
10B	B-200176	1	HIGH PRESSURE PUMP
11B	A-100756	1	LABEL, SUPERLIFE FILTER
12B			
13B	A-400166	1	TWIST TIE
14B	B-400022	1	LIQUID TIGHT FITTING
15B	B-300071	1	POWER CORD ASSEMBLY
16B	A-100529	1	ADAPTER PLATE
17B			
18B			
19B			
20B	B-100445	1	LABEL, UL SYMBOL
21B	B-100443	1	LABEL, GROUND RELIABILITY
22B			
23B	A-100427	1	LABEL, PRE-IMMERSION
24B	A-100637	1	LABEL, IF LEAK OCCURS
25B	B-400201	2	LABEL, SERVICING
26B	A-400202	1	LABEL, FUSE REPLACE
27B	B-100521	1	LABEL, CSA MONOGRAM
28B	A-400200	1	LABEL, DRAIN
29B	B-400264	1	LABEL, WATER INLET
30B	B-100600	1	SERIAL NUMBER TAG

USED ON B/M 1000 MODEL 90A2

B/M 200371
SPANISH 220-240 VOLT 50Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1D	D-200184	1	ELECTRONICS ENCLOSURE
2D	B-200157	1	PISTON COMPRESSOR
3D	B-500067	1	CIRCUIT BREAKER, 10 AMP
4D	B-500075	1	CIRCUIT BREAKER, .25 AMP
5D	B-200183	1	CIRCULATION PUMP
6D	B-500107	1	HEATER ELEMENT
(F) 7D	D-100511	1	MEMBRANE PANEL
(F) 8D	B-100778	1	LABEL, FLAMMABLE
9D	B-300103	1	EPROM
10D	B-200156	1	HIGH PRESSURE PUMP
11D			RESERVED
12D			
13D			
14D	A-400001	2	CABLE TIE
15D	B-500079	1	LINE FILTER
16D	A-200162	1	ADAPTER PLATE ASSEM.
17D	B-451603	2	SCREW
18D	A-400388	4"	HEAT SHRINK TUBING
19D	A-300070	1	SERIES JUMPER
20D	A-400324	1	LABEL GS MARK
21D	B-300099	1	CABLE ASSEMBLY (L1)
22D	B-300100	1	CABLE ASSEMBLY (L2)
23D	A-100780	1	LABEL, PRE-IMMERSION
24D	A-100779	1	LABEL, IF LEAK OCCURS
25D	B-100782	2	LABEL, SERVICING
26D	B-100781	1	LABEL, FUSE REPLACE
27D			
28D	A-400295	1	LABEL, DRAIN
29D	A-400296	1	LABEL, WATER INLET
30D	B-100546	1	SERIAL NUMBER TAG

USED ON B/M 1002 MODEL 90A1

B/M 200254
FRENCH CANADIAN 110-120 VOLT 60Hz
ELECTRONICS & LABELS

ITEM	PART NO.	QTY.	DESCRIPTION
1F	D-200185	1	ELECTRONICS ENCLOSURE
2F	B-200175	1	PISTON COMPRESSOR
3F	B-500081	1	CIRCUIT BREAKER, 20 AMP
4F	B-500078	1	CIRCUIT BREAKER, .50 AMP
5F	B-200049	1	CIRCULATION PUMP
6F	B-500106	1	HEATER ELEMENT
(F) 7F	D-100510	1	MEMBRANE PANEL
(F) 8F	B-100666	1	LABEL, FLAMMABLE
9F	B-300097	1	E PROM, PROGRAMMED
10F	B-200176	1	HIGH PRESSURE PUMP
11F			RESERVED
12F			
13F	B-400166	1	TWIST TIE
14F	B-400022	1	LIQUID TIGHT FITTING
15F	B-300071	1	POWER CORD ASSEMBLY
16F	A-100529	1	ADAPTER PLATE
17F			
18F			
19F			
20F			
21F	B-100688	1	LABEL, GROUND RELIABILITY
22F			
23F	A-100672	1	LABEL, PRE-IMMERSION
24F	A-100659	1	LABEL, IF LEAK OCCURS
25F	B-100664	2	LABEL, SERVICING
26F	B-100662	1	LABEL, FUSE REPLACE
27F	B-100521	1	LABEL, CSA MONOGRAM
28F	A-400295	1	LABEL, DRAIN
29F	A-400296	1	LABEL, WATER INLET
30F	B-100600	1	SERIAL NUMBER TAG

USED ON B/M 1001 MODEL 90A2

B/M 200494
AUSTRALIA 220-240 VOLT 50 Hz
ELECTRONICS & LABELS (F)

ITEM	PART NO.	QTY.	DESCRIPTION
1H	D-200184	1	ELECTRONICS ENCLOSURE
2H	B-200157	1	PISTON COMPRESSOR
3H	B-500067	1	CIRCUIT BREAKER, 10 AMP
4H	B-500075	1	CIRCUIT BREAKER, .25 AMP
5H	B-200183	1	CIRCULATION PUMP
6H	B-500107	1	HEATER ELEMENT
7H	D-100636	1	MEMBRANE PANEL
8H	B-400203	1	LABEL, FLAMMABLE
9H	B-300112	1	EPROM, PROGRAMMED
10H	B-200156	1	HIGH PRESSURE PUMP
11H	A-100756	1	LABEL, SUPERLIFE FILTER
12H			
13H			
14H	A-400001	2	CABLE TIE
15H	B-500079	1	LINE FILTER
16H	A-200162	1	ADAPTER PLATE ASSEM.
17H	B-451603	2	SCREW
18H	A-400388	4"	HEAT SHRINK TUBING
19H	A-300070	1	SERIES JUMPER
20H	A-400324	1	LABEL, GS MARK
21H	B-300099	1	CABLE ASSEMBLY (L1)
22H	B-300100	1	CABLE ASSEMBLY (L2)
23H	A-100427	1	LABEL, PRE-IMMERSION
24H	A-100637	1	LABEL, IF LEAK OCCURS
25H	B-400201	2	LABEL, SERVICING
26H	A-400202	1	LABEL, FUSE REPLACE
27H			
28H	A-400200	1	LABEL, DRAIN
29H	B-400264	1	LABEL, WATER INLET
30H	B-100564	1	SERIAL NUMBER TAG

USED ON B/M 1007 MODEL 90A1

REV	REVISION RECORD
S	PRE PRODUCTION
A	PRODUCTION RELEASE
B	MINOR CLARIFICATION
C	REVISED AS INDICATED ON SHEET 1
D	REVISED AS INDICATED ON SHEET 1
E	ADDED SPANISH VERSION [illegible]
F	ADDED AUSTRALIAN VERSION [illegible]

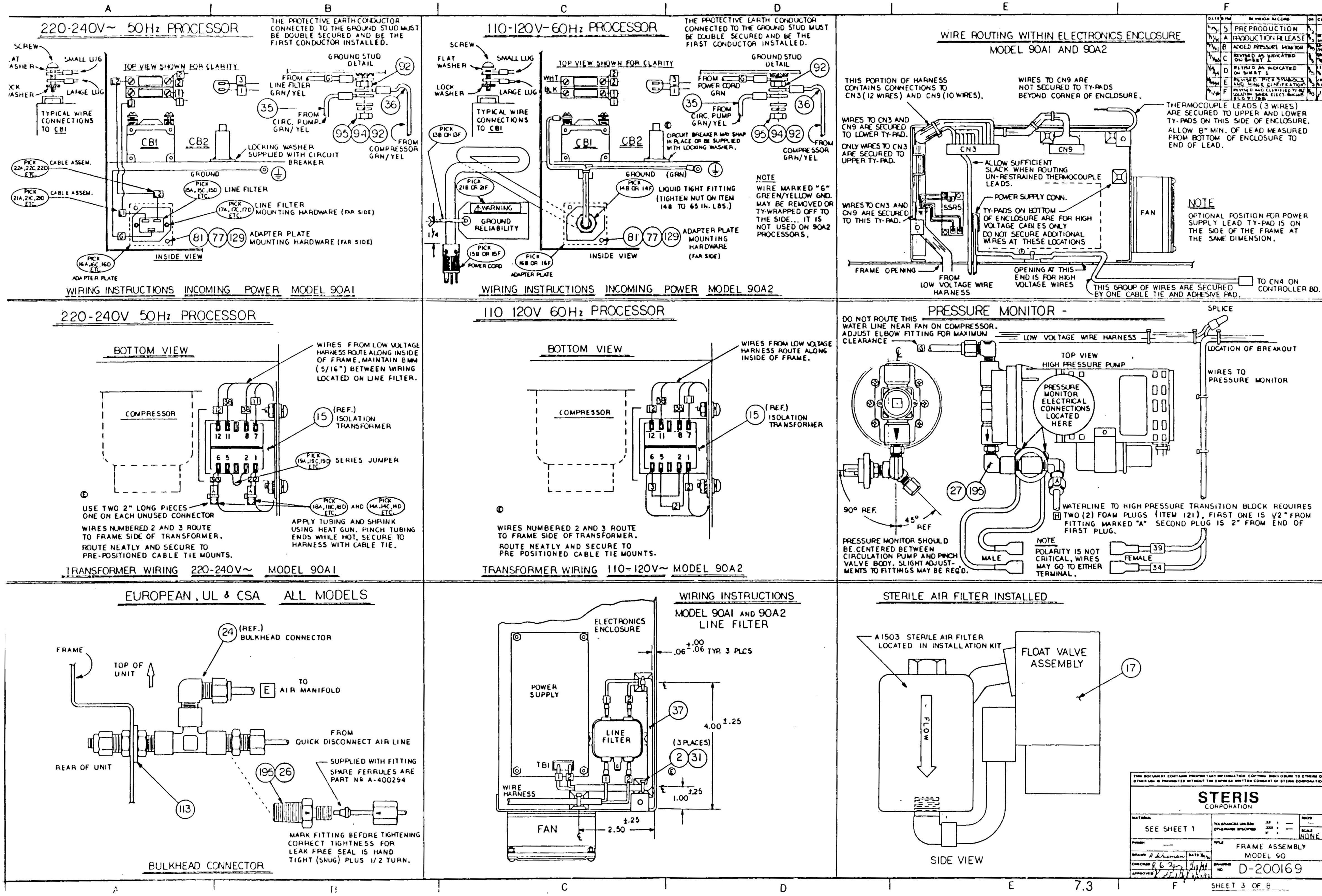
STERIS CORPORATION

MATERIAL: LISTED

TITLE: FRAME ASSEMBLY MODEL 90

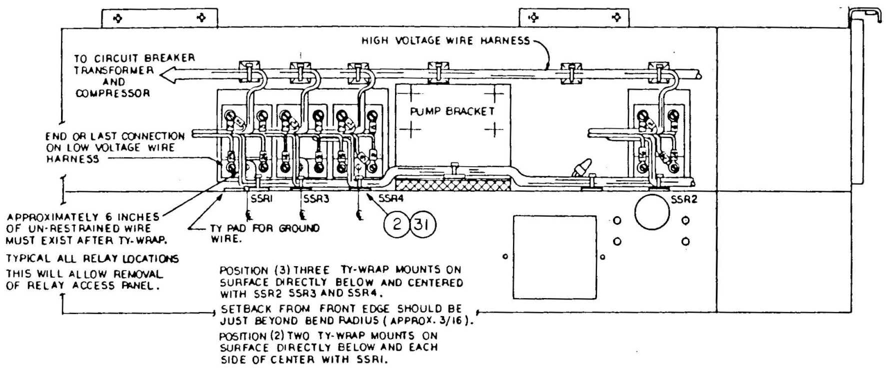
DRAWING NO. D-200169

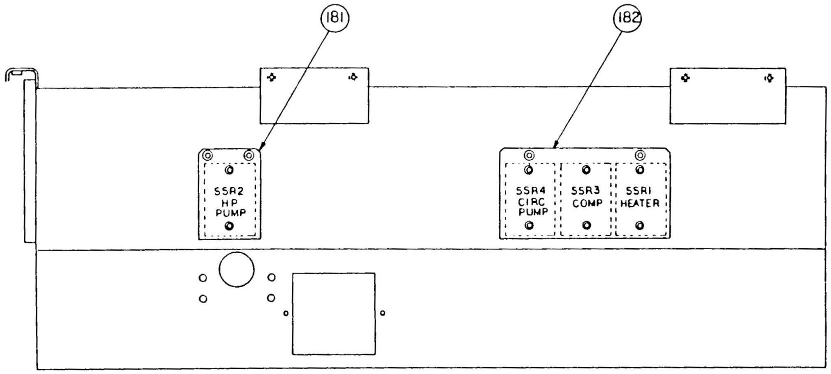
SHEET 2 OF 8


220-240V~ 50Hz PROCESSOR
THE PROTECTIVE EARTH CONDUCTOR CONNECTED TO THE GROUND STUD MUST BE DOUBLE SECURED AND BE THE FIRST CONDUCTOR INSTALLED.
TOP VIEW SHOWN FOR CLARITY
GROUND STUD DETAIL
FROM LINE FILTER GRN/YEL
FROM CIRC. PUMP GRN/YEL
FROM COMPRESSOR GRN/YEL
TYPICAL WIRE CONNECTIONS TO CBI
LOCKING WASHER SUPPLIED WITH CIRCUIT BREAKER
GROUND
LINE FILTER
LINE FILTER MOUNTING HARDWARE (FAR SIDE)
ADAPTER PLATE MOUNTING HARDWARE (FAR SIDE)
INSIDE VIEW
WIRING INSTRUCTIONS INCOMING POWER MODEL 90A1
110-120V-60Hz PROCESSOR
WARNING
GROUND RELIABILITY
POWER CORD
ADAPTER PLATE
CIRCUIT BREAKER MAY SNAP IN PLACE OR BE SUPPLIED WITH LOCKING WASHER.
LIQUID TIGHT FITTING (TIGHTEN NUT ON ITEM 14B TO 65 IN. LBS.)
NOTE
WIRE MARKED "6" GREEN/YELLOW GND. MAY BE REMOVED OR TY-WRAPPED OFF TO THE SIDE... IT IS NOT USED ON 90A2 PROCESSORS.
WIRING INSTRUCTIONS INCOMING POWER MODEL 90A2
WIRE ROUTING WITHIN ELECTRONICS ENCLOSURE
MODEL 90A1 AND 90A2
THIS PORTION OF HARNESS CONTAINS CONNECTIONS TO CN3 (12 WIRES) AND CN9 (10 WIRES).
WIRES TO CN9 ARE NOT SECURED TO TY-PADS BEYOND CORNER OF ENCLOSURE.
THERMOCOUPLE LEADS (3 WIRES) ARE SECURED TO UPPER AND LOWER TY-PADS ON THIS SIDE OF ENCLOSURE. ALLOW 8" MIN. OF LEAD MEASURED FROM BOTTOM OF ENCLOSURE TO END OF LEAD.
ALLOW SUFFICIENT SLACK WHEN ROUTING UN-RESTRAINED THERMOCOUPLE LEADS.
POWER SUPPLY CONN.
TY-PADS ON BOTTOM OF ENCLOSURE ARE FOR HIGH VOLTAGE CABLES ONLY. DO NOT SECURE ADDITIONAL WIRES AT THESE LOCATIONS
NOTE
OPTIONAL POSITION FOR POWER SUPPLY LEAD TY-PAD IS ON THE SIDE OF THE FRAME AT THE SAME DIMENSION.
FRAME OPENING
FROM LOW VOLTAGE WIRE HARNESS
OPENING AT THIS END IS FOR HIGH VOLTAGE WIRES
THIS GROUP OF WIRES ARE SECURED BY ONE CABLE TIE AND ADHESIVE PAD.
TO CN4 ON CONTROLLER BD.
220-240V 50Hz PROCESSOR
BOTTOM VIEW
COMPRESSOR
WIRES FROM LOW VOLTAGE HARNESS ROUTE ALONG INSIDE OF FRAME, MAINTAIN 8MM (5/16") BETWEEN WIRING LOCATED ON LINE FILTER.
(REF.) ISOLATION TRANSFORMER
SERIES JUMPER
USE TWO 2" LONG PIECES ONE ON EACH UNUSED CONNECTOR
APPLY TUBING AND SHRINK USING HEAT GUN. PINCH TUBING ENDS WHILE HOT. SECURE TO HARNESS WITH CABLE TIE.
WIRES NUMBERED 2 AND 3 ROUTE TO FRAME SIDE OF TRANSFORMER.
ROUTE NEATLY AND SECURE TO PRE-POSITIONED CABLE TIE MOUNTS.
TRANSFORMER WIRING 220-240V~ MODEL 90A1
110 120V 60Hz PROCESSOR
WIRES FROM LOW VOLTAGE HARNESS ROUTE ALONG INSIDE OF FRAME.
TRANSFORMER WIRING 110-120V~ MODEL 90A2
PRESSURE MONITOR -
DO NOT ROUTE THIS WATER LINE NEAR FAN ON COMPRESSOR. ADJUST ELBOW FITTING FOR MAXIMUM CLEARANCE
LOW VOLTAGE WIRE HARNESS
SPLICE
LOCATION OF BREAKOUT
WIRES TO PRESSURE MONITOR
TOP VIEW HIGH PRESSURE PUMP
PRESSURE MONITOR ELECTRICAL CONNECTIONS LOCATED HERE
WATERLINE TO HIGH PRESSURE TRANSITION BLOCK REQUIRES TWO (2) FOAM PLUGS (ITEM 121), FIRST ONE IS 1/2" FROM FITTING MARKED "A" SECOND PLUG IS 2" FROM END OF FIRST PLUG.
PRESSURE MONITOR SHOULD BE CENTERED BETWEEN CIRCULATION PUMP AND PINCH VALVE BODY. SLIGHT ADJUSTMENTS TO FITTINGS MAY BE REQ'D.
NOTE
POLARITY IS NOT CRITICAL, WIRES MAY GO TO EITHER TERMINAL.
MALE
FEMALE
EUROPEAN, UL & CSA ALL MODELS
FRAME
TOP OF UNIT
(REF.) BULKHEAD CONNECTOR
TO AIR MANIFOLD
FROM QUICK DISCONNECT AIR LINE
REAR OF UNIT
SUPPLIED WITH FITTING SPARE FERRULES ARE PART NO A-400294
MARK FITTING BEFORE TIGHTENING CORRECT TIGHTNESS FOR LEAK FREE SEAL IS HAND TIGHT (SNUG) PLUS 1/2 TURN.
BULKHEAD CONNECTOR
WIRING INSTRUCTIONS
MODEL 90A1 AND 90A2 LINE FILTER
ELECTRONICS ENCLOSURE
POWER SUPPLY
LINE FILTER
WIRE HARNESS
FAN
STERILE AIR FILTER INSTALLED
A1503 STERILE AIR FILTER LOCATED IN INSTALLATION KIT
FLOAT VALVE ASSEMBLY
FLOW
SIDE VIEW
STERIS CORPORATION
SEE SHEET 1
FRAME ASSEMBLY MODEL 90
D-200169
SHEET 3 OF 6
7.3

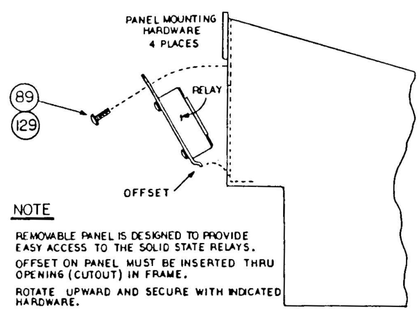
DATE	SYM	REVISION RECORD	DR	CK
[illegible]	A	PRODUCTION RELEASE		
[illegible]	B	MINOR CLARIFICATION		
[illegible]	C	REVISED AS INDICATED ON SHEET [illegible]		
[illegible]	D	NO REVISIONS ON THIS SHEET		
[illegible]	E	NO REVISIONS ON THIS SHEET		
[illegible]	F	NO REVISIONS ON THIS SHEET ECO #1756		

ACCESS PANELS FOR SOLID STATE RELAYS





REAR VIEW OF REAR PANEL



PARTIAL SIDE VIEW

NOTE

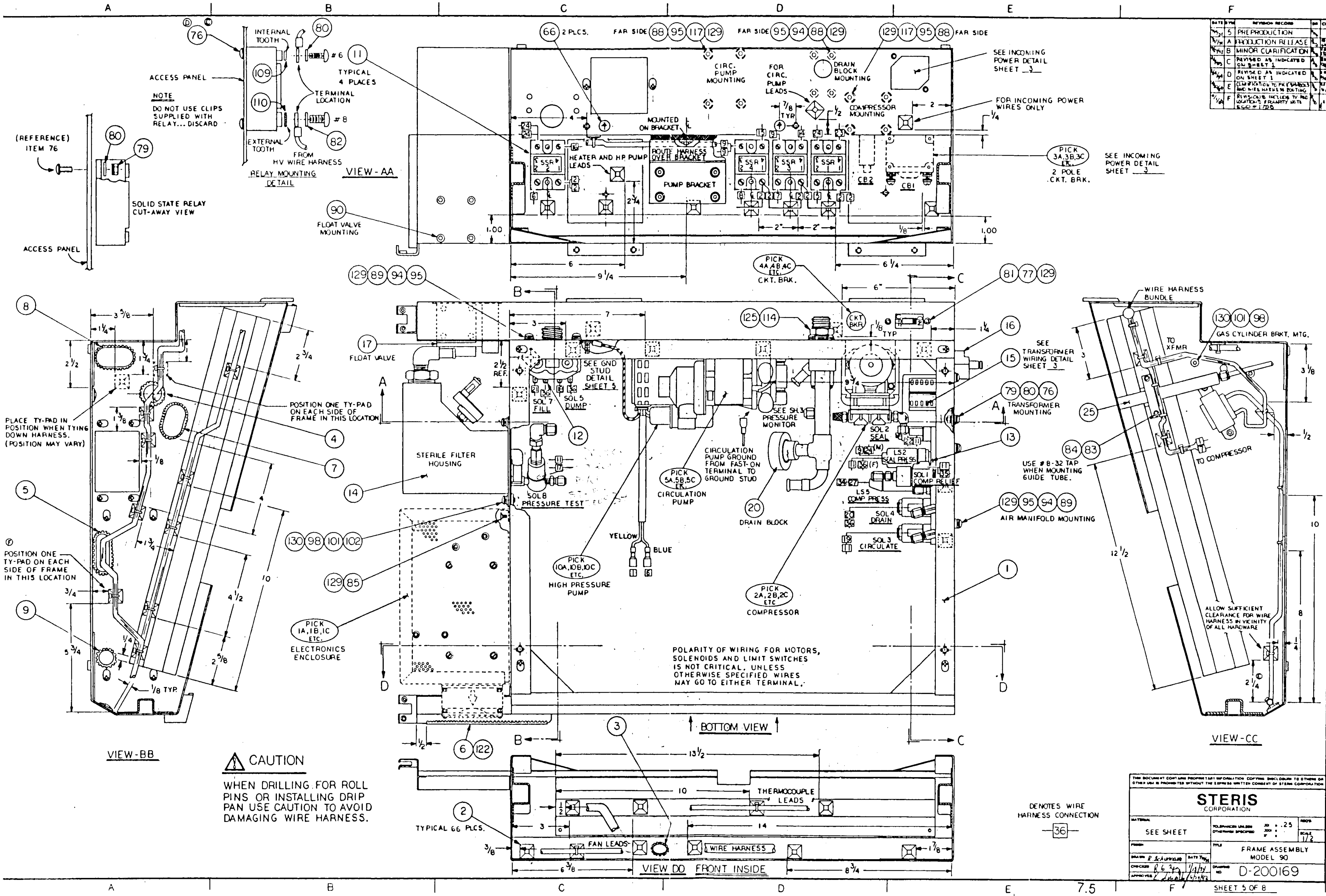
REMOVABLE PANEL IS DESIGNED TO PROVIDE EASY ACCESS TO THE SOLID STATE RELAYS.

OFFSET ON PANEL MUST BE INSERTED THRU OPENING (CUTOUT) IN FRAME.

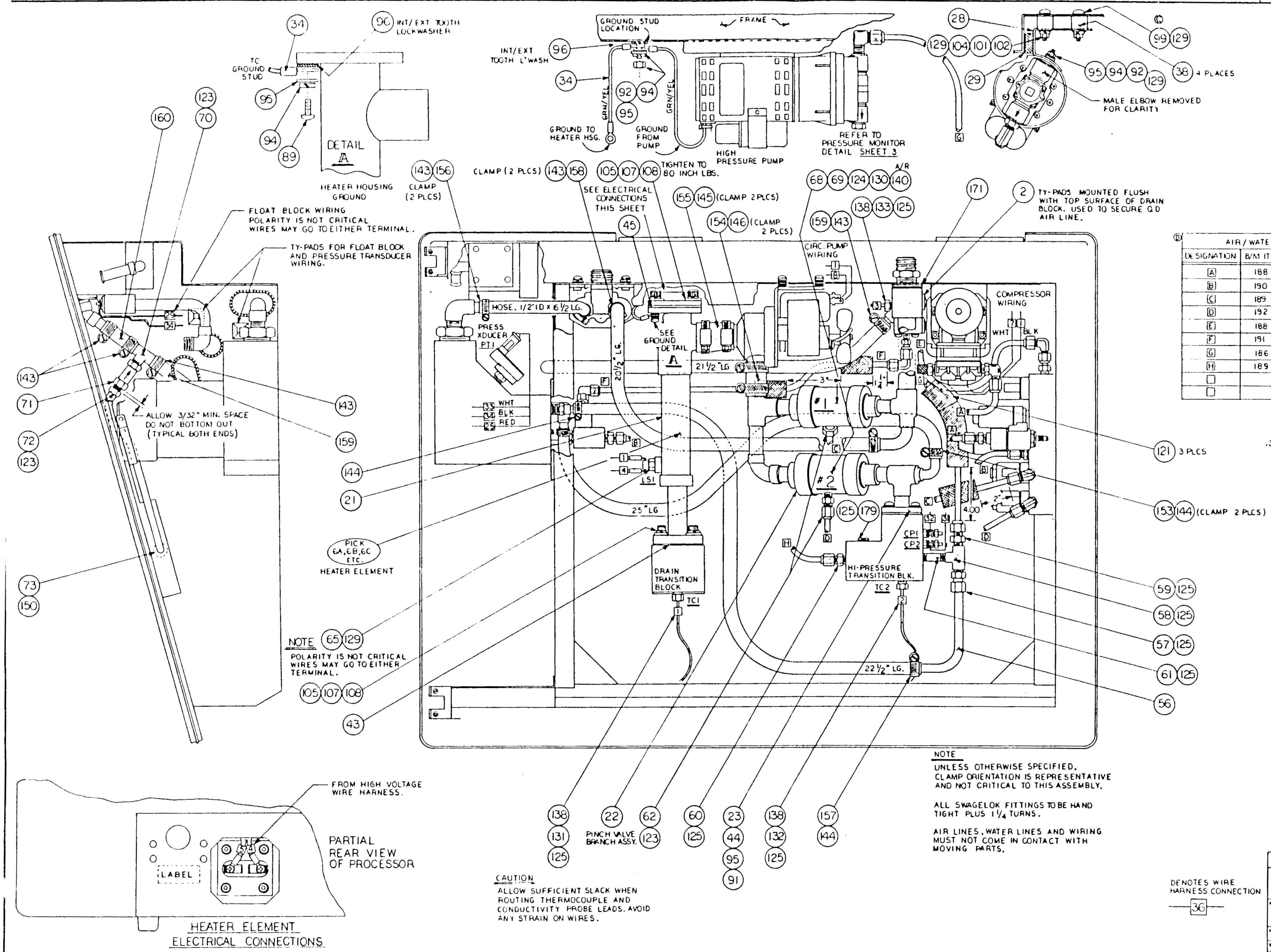
ROTATE UPWARD AND SECURE WITH INDICATED HARDWARE.

STERIS CORPORATION

MATERIAL: SEE SHEET 1 AND 2	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .XXX ± X° ±
	SCALE 1/2
FINISH	TITLE: FRAME ASSEMBLY MODEL 90
DRAWN [illegible] DATE [illegible]	
CHECKED [illegible] [illegible]	DRAWING NO. D-200169
APPROVED [illegible]	



VIEW - AA
RELAY MOUNTING DETAIL
ACCESS PANEL
NOTE
DO NOT USE CLIPS SUPPLIED WITH RELAY... DISCARD
INTERNAL TOOTH
EXTERNAL TOOTH
TERMINAL LOCATION
FROM HV WIRE HARNESS
TYPICAL 4 PLACES
(REFERENCE) ITEM 76
SOLID STATE RELAY CUT-AWAY VIEW
66 2 PLCS.
FAR SIDE 88 95 117 129
FAR SIDE 95 94 88 129
129 117 95 88 FAR SIDE
CIRC. PUMP MOUNTING
FOR CIRC. PUMP LEADS
DRAIN BLOCK MOUNTING
COMPRESSOR MOUNTING
SEE INCOMING POWER DETAIL SHEET 3
FOR INCOMING POWER WIRES ONLY
MOUNTED ON BRACKET
ROUTE HARNESS OVER BRACKET
HEATER AND H.P. PUMP LEADS
PUMP BRACKET
PICK 3A,3B,3C ETC. 2 POLE CKT. BRK.
FLOAT VALVE MOUNTING
PICK 4A,4B,4C ETC. CKT. BRK.
FLOAT VALVE
SEE GND STUD DETAIL SHEET 5
SOL 7 FILL
SOL 5 DUMP
SEE SH.3 PRESSURE MONITOR
SOL 2 SEAL
SEE TRANSFORMER WIRING DETAIL SHEET 3
TRANSFORMER MOUNTING
LS2 SEAL PRESS
SOL 1 COMP RELIEF
LS5 COMP PRESS
SOL 4 DRAIN
SOL 3 CIRCULATE
STERILE FILTER HOUSING
SOL 8 PRESSURE TEST
CIRCULATION PUMP GROUND FROM FAST-ON TERMINAL TO GROUND STUD
PICK 5A,5B,5C ETC. CIRCULATION PUMP
DRAIN BLOCK
YELLOW
BLUE
PICK 10A,10B,10C ETC. HIGH PRESSURE PUMP
PICK 2A,2B,2C ETC COMPRESSOR
PICK 1A,1B,1C ETC. ELECTRONICS ENCLOSURE
AIR MANIFOLD MOUNTING
USE #8-32 TAP WHEN MOUNTING GUIDE TUBE.
POLARITY OF WIRING FOR MOTORS, SOLENOIDS AND LIMIT SWITCHES IS NOT CRITICAL, UNLESS OTHERWISE SPECIFIED WIRES MAY GO TO EITHER TERMINAL.
BOTTOM VIEW
PLACE TY-PAD IN POSITION WHEN TYING DOWN HARNESS. (POSITION MAY VARY)
POSITION ONE TY-PAD ON EACH SIDE OF FRAME IN THIS LOCATION
1/8 TYP.
VIEW-BB
WIRE HARNESS BUNDLE
GAS CYLINDER BRKT. MTG.
TO XFMR
TO COMPRESSOR
ALLOW SUFFICIENT CLEARANCE FOR WIRE HARNESS IN VICINITY OF ALL HARDWARE
VIEW-CC
CAUTION
WHEN DRILLING FOR ROLL PINS OR INSTALLING DRIP PAN USE CAUTION TO AVOID DAMAGING WIRE HARNESS.
TYPICAL 66 PLCS.
THERMOCOUPLE LEADS
FAN LEADS
WIRE HARNESS
VIEW DD FRONT INSIDE
DENOTES WIRE HARNESS CONNECTION
36
PREPRODUCTION
PRODUCTION RELEASE
MINOR CLARIFICATION
STERIS CORPORATION
SEE SHEET
FRAME ASSEMBLY MODEL 90
D-200169
SHEET 5 OF 8
7.5



NOTE

UNLESS OTHERWISE SPECIFIED, CLAMP ORIENTATION IS REPRESENTATIVE AND NOT CRITICAL TO THIS ASSEMBLY.

ALL SWAGELOK FITTINGS TO BE HAND TIGHT PLUS 1 1/4 TURNS.

AIR LINES, WATER LINES AND WIRING MUST NOT COME IN CONTACT WITH MOVING PARTS.

CAUTION

ALLOW SUFFICIENT SLACK WHEN ROUTING THERMOCOUPLE AND CONDUCTIVITY PROBE LEADS. AVOID ANY STRAIN ON WIRES.

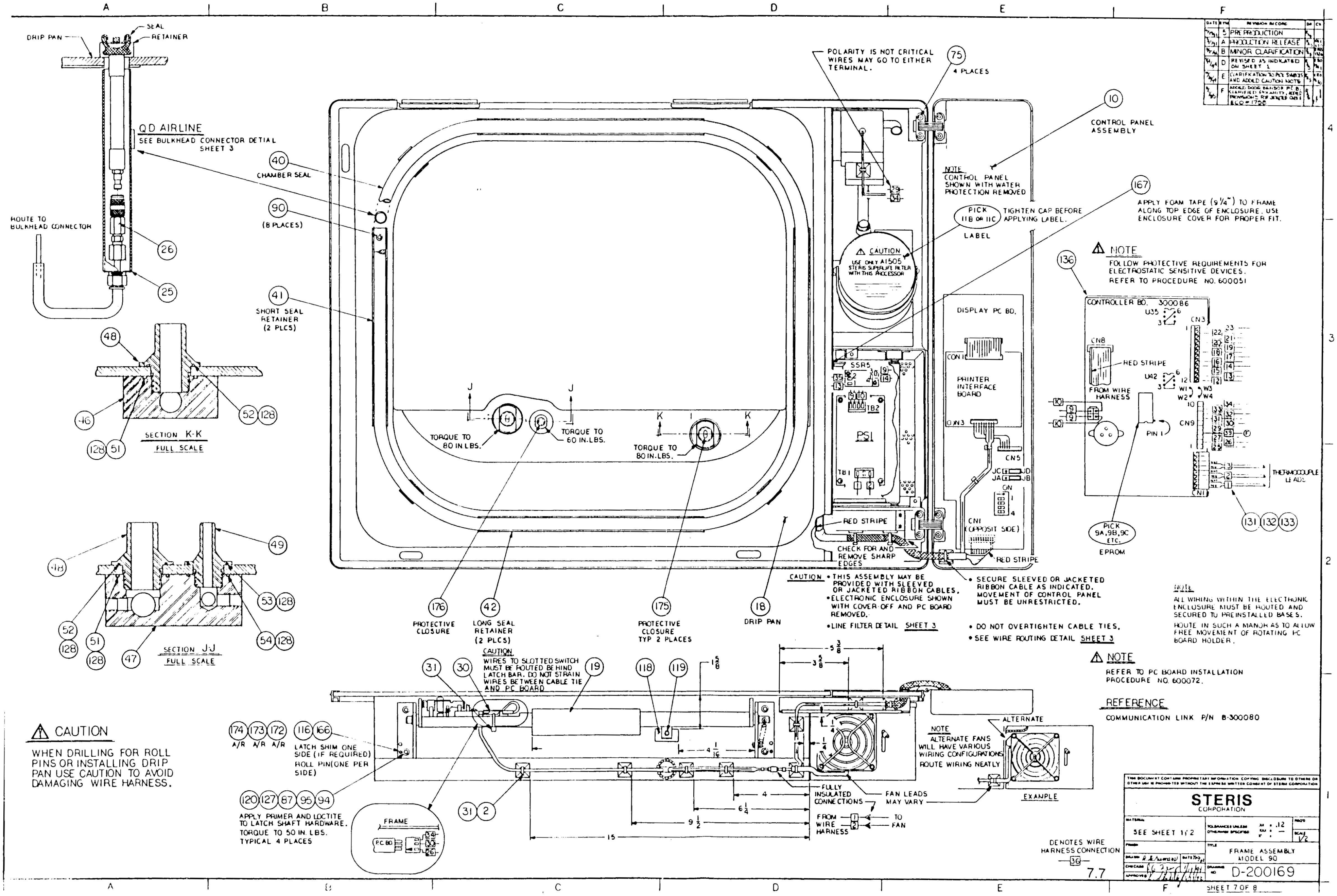
DENOTES WIRE HARNESS CONNECTION 36

DATE	SYM	REVISION RECORD	DR	CK
[illegible]	S	PREPRODUCTION	[illegible]	
[illegible]	A	[illegible] RELEASE	[illegible]	[illegible]
[illegible]	B	MINOR CLARIFICATION	[illegible]	[illegible]
[illegible]	C	REVISED AS INDICATED ON SHEET 1	[illegible]	[illegible]
[illegible]	D	REVISED AS INDICATED ON SHEET 1	[illegible]	[illegible]
[illegible]	E	MINOR CLARIFICATION	[illegible]	[illegible]
[illegible]	F	CLARIFIED POLARITY FOR FLOAT BLOCK [illegible]	[illegible]	[illegible]

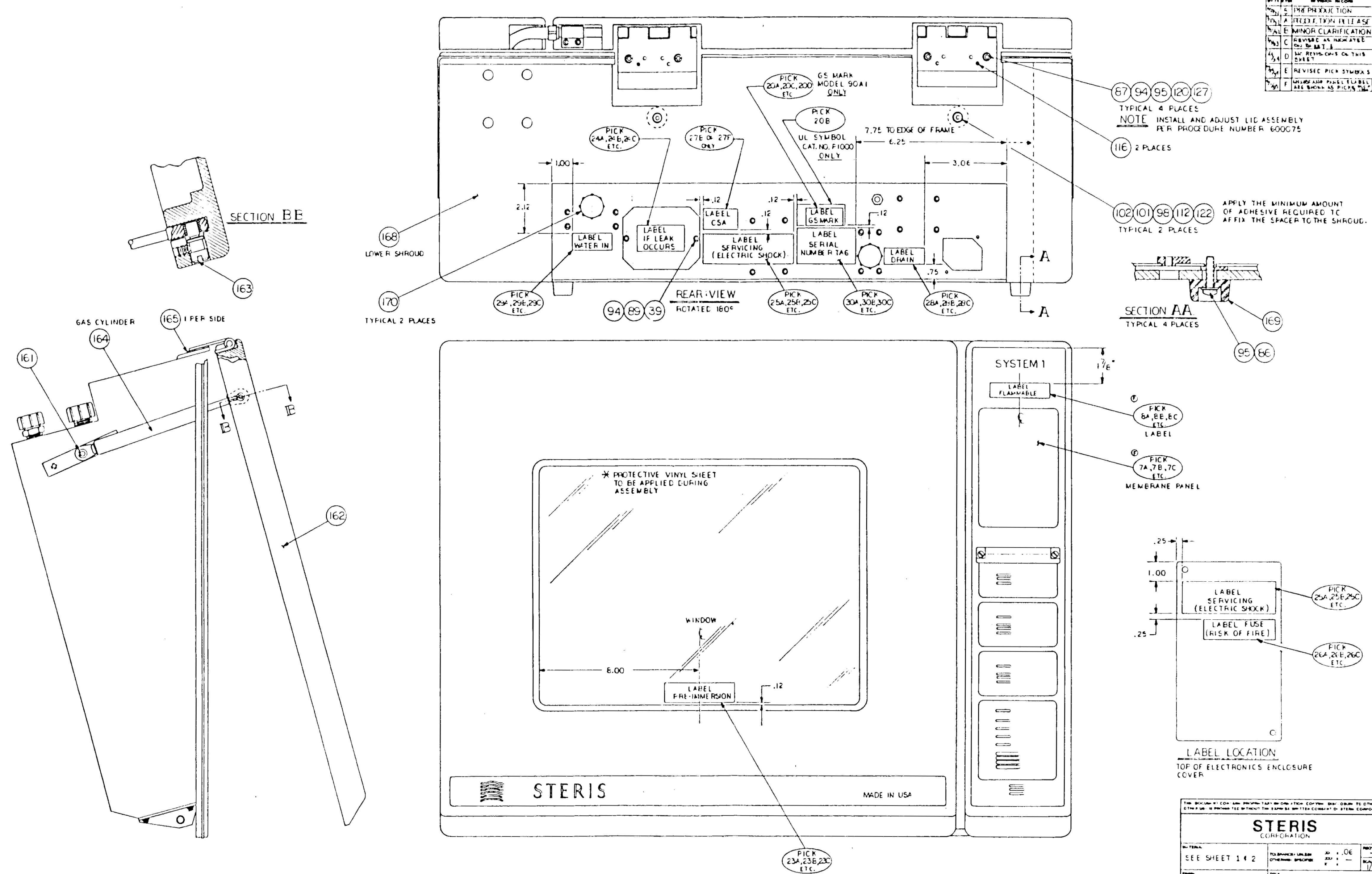
AIR / WATER LINE ROUTING TABLE				FOAM REQ	
DESIGNATION	B/M ITEM	FROM / TO	LENGTH	Y/N	QTY
A	188	AIR MANIFOLD TO COMP.	8	N	0
B	190	AIR MANIFOLD TO STER. FILT.	19 1/2	N	0
C	189	AIR MANIFOLD TO RED VALVE	12	Y	1
D	192	AIR MANIFOLD TO RED VALVE	16	N	0
E	188	AIR MANIFOLD TO BULKHEAD	8	N	0
F	191	SIPHON DRAIN TO STER. FILT.	15	Y	2
G	186	HP PUMP TO STEM ASSY.	15	Y	3
H	189	HP PUMP TO HP TRANS. BLK.	12	Y	2

STERIS
CORPORATION

MATERIAL: SEE SHEET 1
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± .03, .XXX ± —
SCALE: 1/2
TITLE: FRAME ASSEMBLY MODEL 90
DRAWN: R. Schomer DATE: [illegible]
CHECKED: [illegible] [illegible]
APPROVED: [illegible]
DRAWING NO. D-200169



DRIP PAN
SEAL
RETAINER
QD AIRLINE
SEE BULKHEAD CONNECTOR DETIAL SHEET 3
ROUTE TO BULKHEAD CONNECTOR
CHAMBER SEAL
(8 PLACES)
SHORT SEAL RETAINER (2 PLCS)
SECTION K-K FULL SCALE
SECTION J-J FULL SCALE
TORQUE TO 80 IN.LBS.
TORQUE TO 60 IN.LBS.
TORQUE TO 80 IN.LBS.
POLARITY IS NOT CRITICAL WIRES MAY GO TO EITHER TERMINAL.
4 PLACES
CONTROL PANEL ASSEMBLY
NOTE CONTROL PANEL SHOWN WITH WATER PROTECTION REMOVED
PICK 11B OR 11C
LABEL
TIGHTEN CAP BEFORE APPLYING LABEL.
CAUTION USE ONLY A1505 STERIS SUPERLIFE FILTER WITH THIS PROCESSOR
APPLY FOAM TAPE (9 1/4") TO FRAME ALONG TOP EDGE OF ENCLOSURE. USE ENCLOSURE COVER FOR PROPER FIT.
NOTE FOLLOW PROTECTIVE REQUIREMENTS FOR ELECTROSTATIC SENSITIVE DEVICES. REFER TO PROCEDURE NO. 600051
DISPLAY PC BD.
PRINTER INTERFACE BOARD
CONTROLLER BD. 300086
RED STRIPE
FROM WIRE HARNESS
PIN 1
THERMOCOUPLE LEADS
PICK 9A,9B,9C ETC.
EPROM
RED STRIPE
CHECK FOR AND REMOVE SHARP EDGES
CN1 (OPPOSIT SIDE)
RED STRIPE
PROTECTIVE CLOSURE
LONG SEAL RETAINER (2 PLCS)
PROTECTIVE CLOSURE TYP 2 PLACES
DRIP PAN
CAUTION • THIS ASSEMBLY MAY BE PROVIDED WITH SLEEVED OR JACKETED RIBBON CABLES. • ELECTRONIC ENCLOSURE SHOWN WITH COVER OFF AND PC BOARD REMOVED. • LINE FILTER DETAIL SHEET 3
• SECURE SLEEVED OR JACKETED RIBBON CABLE AS INDICATED. MOVEMENT OF CONTROL PANEL MUST BE UNRESTRICTED.
• DO NOT OVERTIGHTEN CABLE TIES.
• SEE WIRE ROUTING DETAIL SHEET 3
NOTE ALL WIRING WITHIN THE ELECTRONIC ENCLOSURE MUST BE ROUTED AND SECURED TO PREINSTALLED BASES. ROUTE IN SUCH A MANOR AS TO ALLOW FREE MOVEMENT OF ROTATING PC BOARD HOLDER.
NOTE REFER TO PC BOARD INSTALLATION PROCEDURE NO. 600072.
REFERENCE COMMUNICATION LINK P/N B-300080
CAUTION WIRES TO SLOTTED SWITCH MUST BE ROUTED BEHIND LATCH BAR. DO NOT STRAIN WIRES BETWEEN CABLE TIE AND PC BOARD
CAUTION WHEN DRILLING FOR ROLL PINS OR INSTALLING DRIP PAN USE CAUTION TO AVOID DAMAGING WIRE HARNESS.
LATCH SHIM ONE SIDE (IF REQUIRED) ROLL PIN (ONE PER SIDE)
APPLY PRIMER AND LOCTITE TO LATCH SHAFT HARDWARE. TORQUE TO 50 IN. LBS. TYPICAL 4 PLACES
FRAME
PC BD
NOTE ALTERNATE FANS WILL HAVE VARIOUS WIRING CONFIGURATIONS ROUTE WIRING NEATLY
ALTERNATE
EXAMPLE
FULLY INSULATED CONNECTIONS
FAN LEADS MAY VARY
FROM WIRE HARNESS
TO FAN
DENOTES WIRE HARNESS CONNECTION
REVISION RECORD
PRE PRODUCTION
PRODUCTION RELEASE
MINOR CLARIFICATION
REVISED AS INDICATED ON SHEET 1
STERIS CORPORATION
SEE SHEET 1/2
FRAME ASSEMBLY MODEL 90
D-200169
SHEET 7 OF 8
7.7



		Revision Record
	S	PRE PRODUCTION
	A	PRODUCTION RELEASE
	B	MINOR CLARIFICATION
	C	REVISED AS INDICATED ON SHEET 1
	D	NO REVISIONS ON THIS SHEET
	E	REVISED PICK SYMBOLS
	F	MEMBRANE PANEL & LABEL ARE SHOWN AS PICKS

STERIS CORPORATION

MATERIAL: SEE SHEET 1 & 2

TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± .06

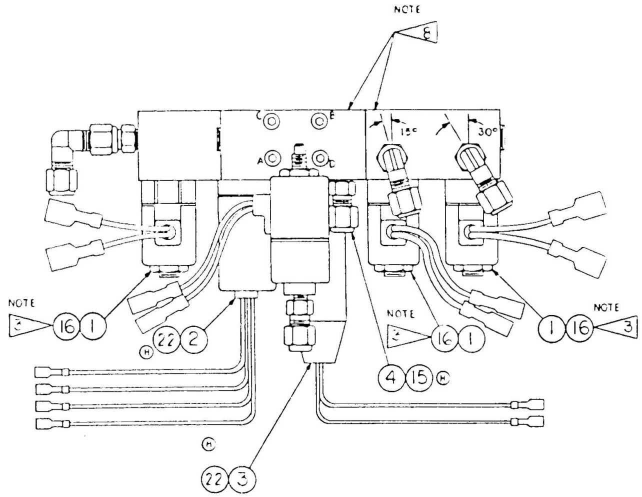
SCALE 1/2

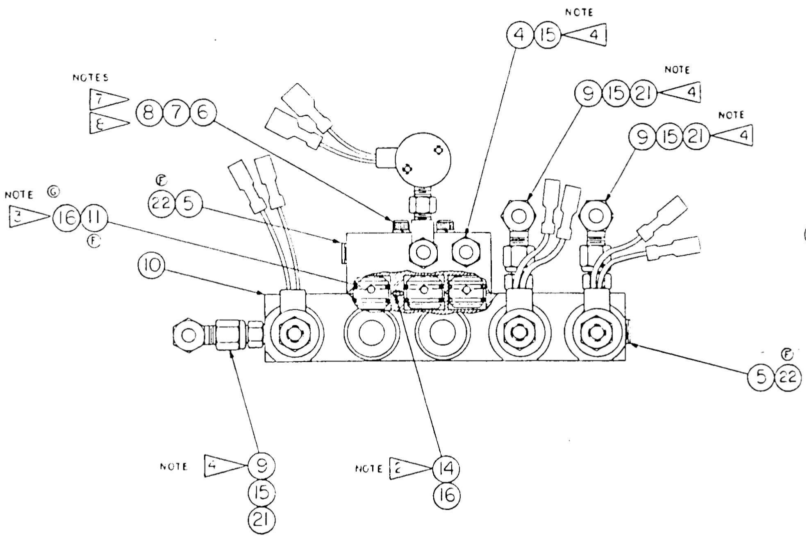
TITLE: FRAME ASSEMBLY MODEL 90

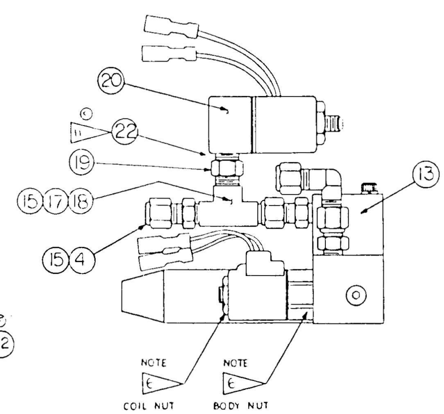
DRAWING NO. D-200169

7.8

SHEET 8 OF 8







NOTES

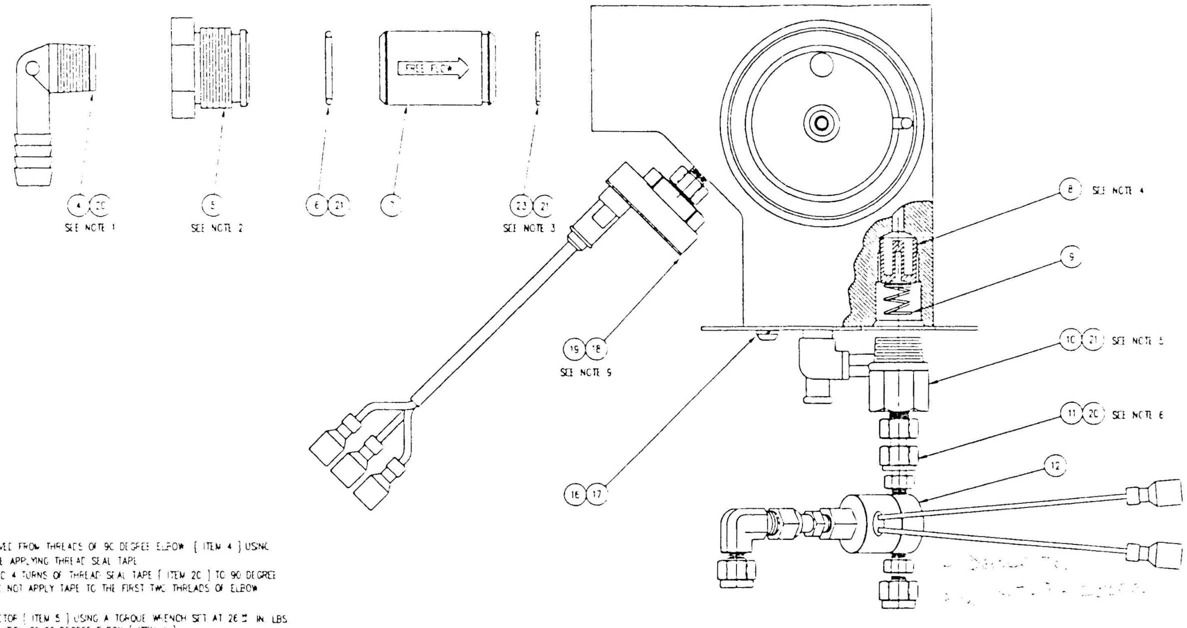
1. MANIFOLD MUST BE CLEAN AND FREE OF ALL FOREIGN MATERIAL AND DEGREASED. INSPECT ALL O-RING SEATS VISUALLY BEFORE INSTALLATION.
2. APPLY A THIN FILM OF O-RING LUBRICANT TO ALL SURFACES OF O-RING. INSTALL CAREFULLY, MINIMIZING STRETCH.
3. APPLY A THIN FILM OF O-RING LUBRICANT TO EXPOSED SURFACE OF BOTH O-RINGS.
4. INSTALL AND TIGHTEN IN ACCORDANCE WITH VENDOR INSTRUCTIONS.
5. DO NOT APPLY LOCTITE (ITEM 15) TO THE SOLENOID VALVES (ITEM 1) THREADED STEMS.
6. E G BODY NUT TIGHTENING TORQUE : 7 - 9 IN LBS. COIL NUT TIGHTENING TORQUE : 12 - 15 IN LBS.
7. TIGHTENING TORQUE 40-45 IN LBS.
8. BEFORE TIGHTENING SCREWS MAKE SURE THAT VALVE BLOCK AND MANIFOLD BASE SURFACES ARE PARALLEL. VALVE BLOCK MUST NOT BE MISALIGNED. TIGHTENING FOR SCREWS IS A, B, C, D AS SHOWN.
9. TEST PER ENGINEERING PROCEDURE No A-600033-1. USE FIXTURE SK-246 AND SK-247.
10. BAG FINISHED ASSEMBLY USING P/N 613018 POLYTUBE ROLL.
11. APPLY 2 WRAPS OF ITEM 22 BEFORE INSTALLING ITEM 20 ON ITEM 19. START TAPE 1-2 THREADS FROM END.

	ITEM	QTY.	PART NO.	DESCRIPTION
	23			
C	22	A/R	A-400367	TEFLON TAPE, 1/4 WIDE
	21	3	B-400139	TUBE ADAPTER, MALE
	20	1	A-200188	SOLENOID VALVE SUB-AS
	19	1	A-400089	NIPPLE, HEX
	18	1	A-400088	TEE, 1/8 NPT
	17	1	A-400087	NIPPLE, LONG
	16	A/R	A-400035	LUBRICANT O-RING
	15	A/R	A-400036	THREAD SEALANT
	14	1	B-450617	O-RING
	13	1	B-100485	MANIFOLD VALVE BLOCK
G	12			
F	11	3	A-400390	CHECK VALVE
	10	1	C-100484	MANIFOLD BASE
	9	3	A-400140	ELBOW
B	8	A/R	A-400034	LOCTITE, 242
	7	4	B-450215	LOCKWASHER NO. 8
	6	4	B-451913	SCREW, 8-32 X 1 1/2
	5	2	A-400055	PLUG, HEX HEAD
	4	2	A-400141	CONNECTOR, MALE
	3	1	A-300053	ASSEM., PRESSURE SWIT
	2	1	B-300067	ASSEM., PRESSURE SWIT
	1	3	A-200189	SOLENOID VALVE SUB-AS

STERIS
CORPORATION

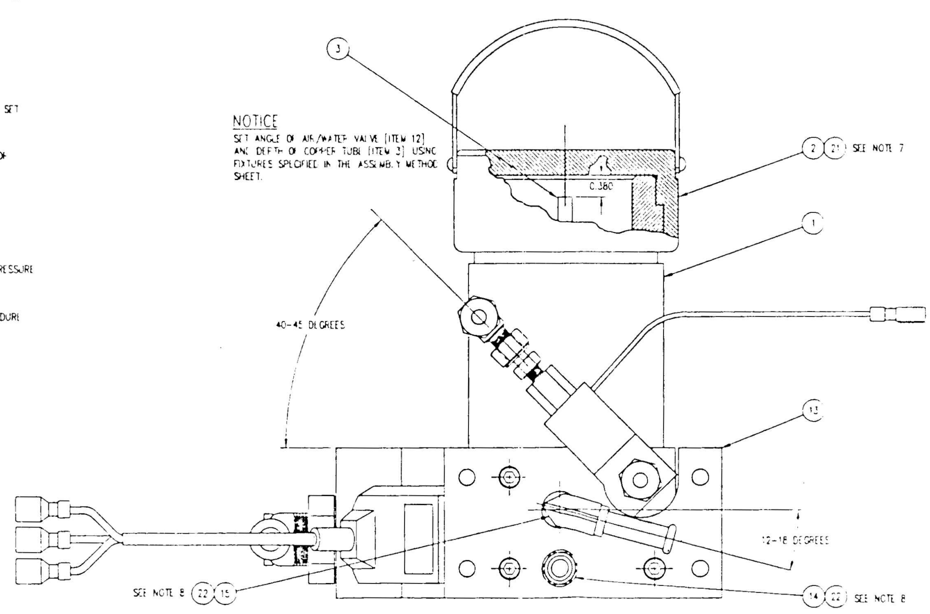
MATERIAL: LISTED
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± — ; .XXX ± — ; ° ± 2°
FINISH: —
DRAWN: R. Chapman
CHECKED: J. Wilk 1/14/94
APPROVED: N. L. Simel
TITLE: ASSEMBLY AIR MANIFOLD
DRAWING NO. D-200160

USED ON 200169



NOTES

1. FLASH MAY BE REMOVED FROM THREADS OF 90 DEGREE ELBOW (ITEM 4) USING A WIRE BRUSH BEFORE APPLYING THREAD SEAL TAPE. APPLY BETWEEN 3 AND 4 TURNS OF THREAD SEAL TAPE (ITEM 20) TO 90 DEGREE ELBOW (ITEM 4) DO NOT APPLY TAPE TO THE FIRST TWO THREADS OF ELBOW.
2. INSTALL MALE CONNECTOR (ITEM 5) USING A TORQUE WRENCH SET AT 26 ± IN. LBS PRIOR TO THE INSTALLATION OF 90 DEGREE ELBOW (ITEM 4).
3. BE CERTAIN O-RING IS IN PLACE BEFORE FINAL ASSEMBLY.
4. POSITION FILTER AS SHOWN LARGE OPENING TOWARD FILTER HOUSING.
5. INSTALL MODIFIED FEMALE PIPE ADAPTER (ITEM 10) USING A TORQUE WRENCH SET AT 30 ± IN. LBS.
6. INSTALL AND TIGHTEN IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS FOR SWAGELOK FITTINGS. STERIS CORPORATION PROCEDURE NUMBER 600031.
7. APPLY A LIGHT FILM OF O-RING LUBRICANT (ITEM 21) TO THE O-RING IN THE FILTER CAP (ITEM 2) BEFORE FITTING THE CAP TO THE FILTER HOUSING.
8. DO NOT APPLY THREAD SEAL TAPE (ITEM 20) TO THE FIRST TWO THREADS ON THIS FITTING.
9. APPLY TWO TURNS OF THREAD SEAL TAPE (ITEM 19) TO THREADS ON THE PRESSURE TRANSDUCER (ITEM 18) DO NOT APPLY TAPE TO THE FIRST TWO THREADS.
10. TEST COMPLETED ASSEMBLY IN ACCORDANCE WITH STERIS CORPORATION PROCEDURE NUMBER 600034-1.



REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE NO. 487	11-14-89	RES
	B	RELEASE TO PRODUCTION. RELEASE NO. 530	9-14-90	NLS
	C	ITEM 18 WAS 200025. ADDED FIXTURE NO. 5 AND CHANGED ANGLE. ERC 1130	5-21-91	MH
	D	REPLACED ITEMS 4,5 & 7 WITH NON-CORROSIVE AND STAINLESS STEEL COMPONENTS. ADDED TEFLON TAPE & NOTE 2. ERC 1202	10-7-91	NLS
	E	ADDED NOTE 6. CHG NO. OF TURNS IN NOTE 2 WAS 1 1/2-2. IT 4 WAS 400323 SOL VALVE ANGLE WAS 5-15 DEG. ERC 1185	2-3-92	KES
	F	ADDED ITEM 26. NOTE 11. THREAD SEALANT ON ITEMS 12,13 AND 21 WAS ITEM 29. NOTE FOR IT 26 WAS NOTE 9. ERC 1272	4-15-92	KES
	G	ADDED ITEM 30. ITEM 7 WAS P/N 400327. ITEM 18 WAS P/N 200208. ERC 1285	5-22-92	KES
	H	REVISED AIR/WATER VALVE FITTINGS. TORQUE SETTING FOR ITEM 10 WAS 16 IN. LBS. ERC 1324	8-26-92	KES
	J	ITEM 15 14 WAS 09 14. ERC 1357	11-12-92	BH
	K	NOTE NO. 8. 26 IN-LBS WAS 23 IN-LBS. PARTIALLY CORRECTED ITEMS 6 & 30. DWG. SCALE CORRECTED. ERC 1391	1-28-93	RCS
	L	AIR/WATER VALVE IS NOW A SUB-ASSEMBLY. REVISED REQUIRED FITTINGS. ERC 1422	4-5-93	KES
	M	ITEM 12 WAS B-200284. REMOVED DWG. SIZE FROM P/N IN BOM. ECC 1877	8-29-95	RCS
	N	REDRAWN ON AUTOCAD. INCLUDED OUTSTANDING ITEM CHANGES. CHANGED ITEM 12 FROM 200510 TO 200284. REVISED NOTES AND GENERAL DRAWING CLEAN-UP. ECC [illegible]	11-30-95	WJF
	P	ITEM 12 P/N WAS 200284. ECC 3186	[illegible]	[illegible]

ITEM	QTY.	PART NO.	DESCRIPTION
24	REF	M200119	ASSEMBLY METHOD SHEET
23	1	450614	O-RING, SILICONE
22	A/R	400036	SEALANT, THREAD
21	A/R	400035	O-RING LUBRICANT
20	A/R	400150	THREAD SEAL TAPE, 1/2" WIDE
19	A/R	400367	THREAD SEAL TAPE, 1/4" WIDE
18	1	200164	ASSY, PRESSURE TRANSDUCER
17	3	450207	WASHER, 1/4 LOCK
16	3	452100	SCREW, HEX SOC BUTTON HD CAP
15	1	200027	SUB-ASSY, 90 DEGREE FITTING
14	1	200255	ASSY, ADAPTER, SHORT
13	1	100201	FILTER MOUNTING PLATE
12	1	200510	AIR/WATER VALVE ASSEMBLY
11	1	400143	MALE CONNECTOR
10	1	100342	MODIFIED FEMALE PIPE ADAPTER
9	1	452802	SPRING, COMPRESSION
8	1	400080	FILTER
7	1	400368	CHECK VALVE
6	1	450608	O-RING, SILICONE
5	1	100612	MALE CONNECTOR
4	1	400358	90 DEGREE ELBOW
3	1	100203	TUBING, COPPER
2	1	200118	ASSY, FILTER HOUSING CAP
1	1	100471	HOUSING, STERILE FILTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ± 1/32, DECIMALS .XX ± 0.03, .XXX ± 0.015, ANGLES ± 1°

STERIS Corporation Mentor, Ohio

ASSEMBLY
STERILE FILTER HOUSING

DRAWN BY: RAS, DATE: 9-14-90
CHECKED BY: NLS, DATE: 10-9-90
APPROVED BY: AF, DATE: 11-30-95
LISTED

SIZE: D | PROJECT NO.: 95018 | PART NO.: 200119 | REV.: P

USED ON 200165

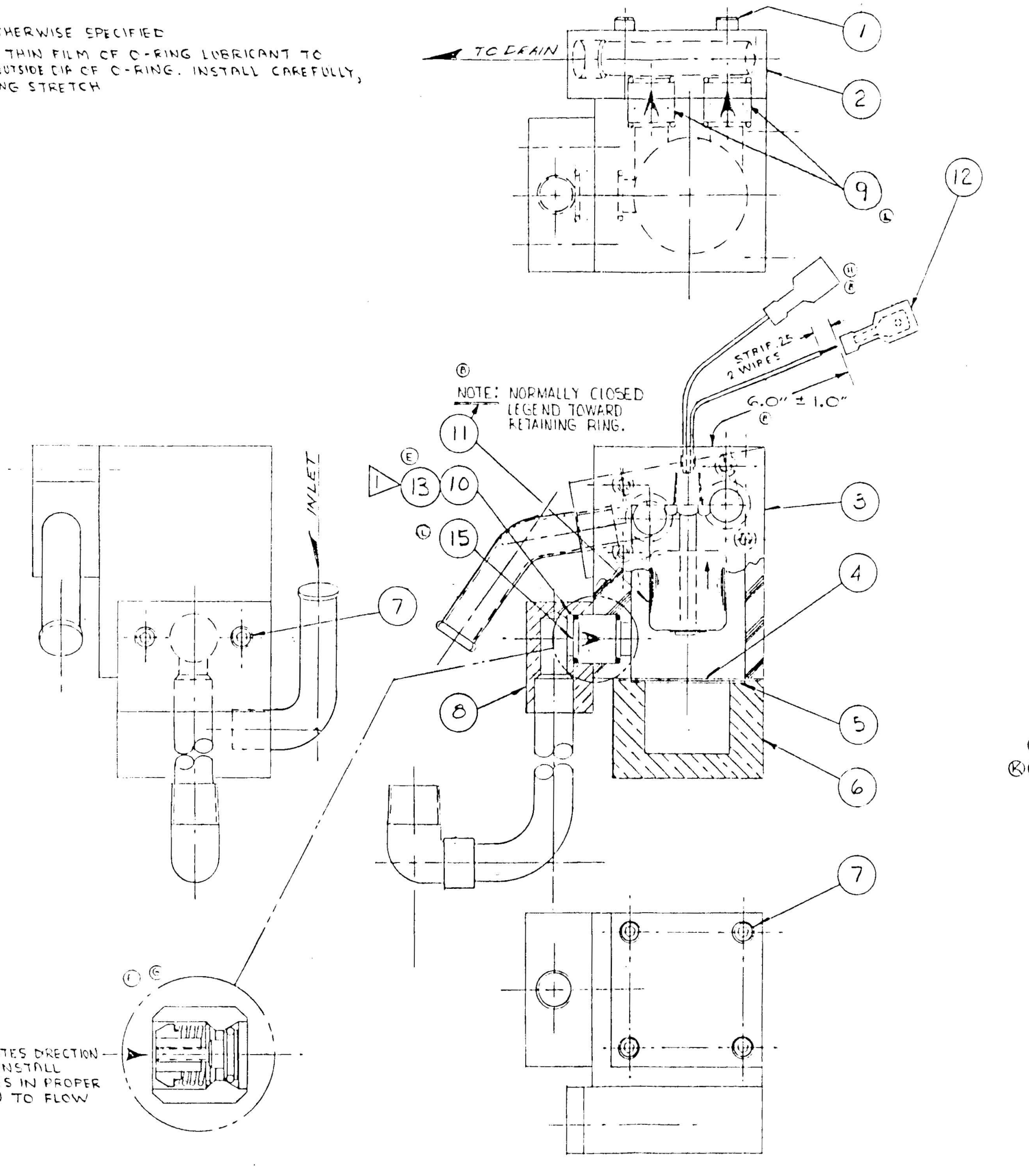
DO NOT SCALE DRAWING | SCALE 1=1 | SHEET 1 OF 1

7.10

NOTES: (E)

UNLESS OTHERWISE SPECIFIED

1.) APPLY A THIN FILM OF O-RING LUBRICANT TO ENTIRE OUTSIDE DIA OF O-RING. INSTALL CAREFULLY, MINIMIZING STRETCH



ARROW INDICATES DIRECTION OF FLOW - INSTALL CHECK VALVES IN PROPER ORIENTATION TO FLOW AS SHOWN

DATE	SYM	REVISION RECORD	DR	ERC
4/88	A	RELEASED		
7/19/88	B	ADDED NOTE, STRIP LENGTH AND WIRE LENGTH		
11/4/88	C	P/N CHANGE - ITEM 1 WAS 400004, ITEM 7 WAS 400003 ITEM 10 WAS 400005 ALSO ADDED DWG 3/263 FOR HARDWARE AS INDICATED		
11/7/89	D	CHECK VALVE REQUIRES PRE-TESTING P/N WAS 400006		
5-16 90	E	ITEM 9 WAS 400238 ITEM 3 WAS 100249 ADDED NOTE 1 & ITEM 13 ADDED VIEW OF CHECK VALVE		
6-18 90	F	ITEM 2 WAS B-200041 ITEM 6 WAS C-200026 ITEM 8 WAS B-200025 ITEM 1 WAS A-451909		
7-K 90	G	ADDED CHAMFER TO ENDS OF CHECK VALVES ITEM 10 WAS B-450606		
1-28 91	H	[illegible]		
1-9 92	J	CHANGE CHECK VALVE P/N WAS A-400262		
4-10 95	K	CHANGED CHECK VALVE P/N WAS A-400345		
3-14 96	L	ADDED P/N 400345 LEADER NOTE WAS (9) ADDED LEADER NOTE (9)		

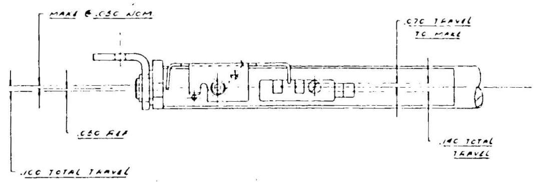
	ITEM	REQD	PART NO.	DESCRIPTION
(L)	15	1	400345	CHECK VALVE; SS
	14	REF.	M200042	METHOD SHEET
(E)	13	A/R	400035	O-RING LUBRICANT
(H)	12	2	350021	INSULATED MALE DISCONNECT
	11	1	500005	FLOAT ASSEMBLY
(H)(G)(C)	10	6	450621	O-RING, SILICONE
(K)(J)(E)(D)	9	2	400510	CARTRIDGE CHECK VALVE
(F)(G)	8	1	200143	RETAINING BLOCK SUB-ASSEM.
(C)	7	6	451908	SCR. SOC. HD CAP #8-32 x 1.00 LG
(F)	6	1	200145	LOWER CAP SUB-ASSEM
	5	1	100146	FILTER SCREEN
	4	1	100222	FLOAT GASKET
(E)	3	1	100488	FLOAT BLOCK
(F)(C)	2	1	200144	DRAIN BLOCK SUB-ASSEM.
(F)(C)	1	4	451913	SCR. SOC. HD CAP #8-32 x 1.50 LG
	O	REQD	PART NO.	DESCRIPTION

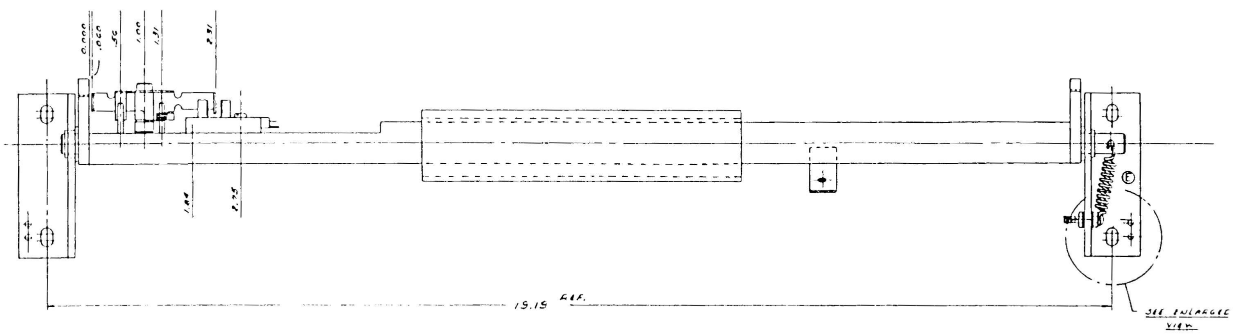
STERIS
CORPORATION

MATERIAL SEE B/M	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .XXX ± X ±	REQD 1 SCALE FULL
FINISH	TITLE FLOAT VALVE ASSEM.	
DRAWN [illegible] DATE 4/88		
CHECKED	DRAWING NO. C 200042	
APPROVED [illegible]		

7.11 USED ON 200065 & 200169

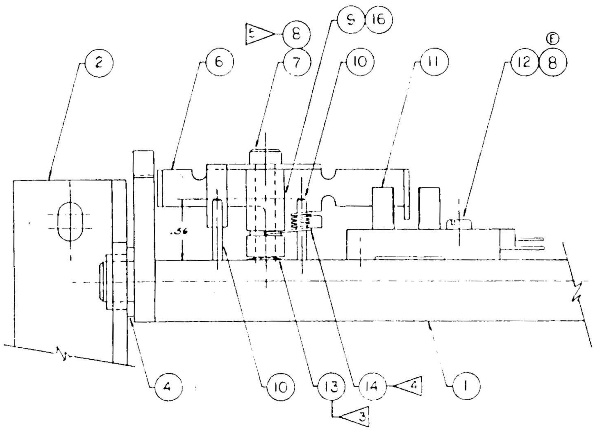
DATE	SYM	REVISION RECORD	BY	CK
[illegible]	A	RELEASED	[illegible]	
[illegible]	B	[illegible]	[illegible]	
[illegible]	C	[illegible]	[illegible]	[illegible]
[illegible]	D	[illegible] REVISED NOTE [illegible]	[illegible]	[illegible]
[illegible]	E	[illegible]	[illegible]	[illegible]
[illegible]	F	REPLACED GROOVED PIN WITH KNURLED PIN	[illegible]	[illegible]



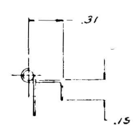


NOTES!

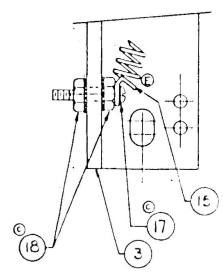
1. BENCH ASSEMBLE LATCH FLAG ASSEMBLY AND ADJUST IN ACCORDANCE WITH PROCEDURE N° 600011 - THIS ASSEMBLY WILL BE RE-ADJUSTED, SECURED AND PINNED AT THE FINAL ASSEMBLY LEVEL.
2. MODIFY TORSION SPRING - ITEM (14) - BEFORE ASSEMBLY - SEE ENLARGED VIEW.
3. MOUNT LATCH FLAG, SPACER AND WAVE WASHER - ITEMS (6) (9) (13) OVER SHOULDER SCREW, ITEM (7), GREASE ALL CONTACT POINTS BETWEEN SHOULDER SCREW, LATCH FLAG AND SPACER USING A LIGHT FILM OF GREASE - ITEM (16)
4. POSITION AND LOAD SPRING, ITEM (14) WHILE LOWERING PARTS INTO POSITION.
5. (E) BEFORE INSERTING SCREW ITEM (7), INTO LATCH SHAFT, ITEM (1), CLEAN THREADS ON SCREW WITH ALCOHOL. ALSO CLEAN THREADED 8-32 HOLE IN LATCH SHAFT WITH ALCOHOL. MAKE SURE THAT BOTH SURFACES ARE CLEAN & DRY. APPLY LOCKTITE #222 ITEM (8) PER MANUFACTURES' LABEL INSTRUCTIONS TO THREADS OF SHOULDER SCREW ITEM (7) AND TIGHTEN SECURELY. BE CERTAIN THE LATCH FLAG, ITEM (6), PIVOTS SMOOTHLY AND EASILY ROTATES TO A STOP AGAINST THE PIN ITEM (10).

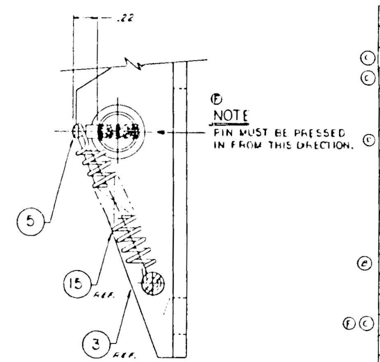


LATCH FLAG ASSEMBLY
SCALE - 2X



TORSION SPRING MODIFICATION
REF ITEM (14)
SCALE - 2X





EXTENSION SPRING ASSEMBLY
ENLARGED VIEW
SCALE - 2X

	ITEM	QTY.	PART NO.	DESCRIPTION
(C)	18	2	B-453000	NUT, #4-40 KEPS
(C)	17	1	B-451601	SCREW, #4-40 x .62 LG. SL PAN HD
	16	A/R	A-400033	GREASE - HIGH VACUUM
	15	1	B-452800	EXTENSION SPRING
(C)	14	1	B-452803	TORSION SPRING
	13	1	B-450212	WAVE WASHER - SP STL
	12	1	B-451801	SCR. PAN HD. #6-32 x .38 LG.
	11	1	A-300009	SWITCH
	10	2	B-450001	PIN - .09 Ø x .75 LG - TYPE H
	9	1	A-100326	PIVOT SPACER
(E)	8	A/R	A-400295	THD. ADHESIVE - LOCTITE #222
	7	1	B-451910	SHLDR. SCR. .188 Ø x 1.00 LG.
	6	1	C-100372	LATCH FLAG
(F) (C)	5	1	B-450002	KNURLED PIN 1/8 DIA.
	4	2	B-400047	FLANGED BEARING
	3	1	B-100233	LATCH BRACKET - R.H.
	2	1	B-100234	LATCH BRACKET - L.H.
	1	1	D-100231	LATCH SHAFT - WELDMENT

[illegible proprietary notice]

STERIS
CORPORATION

TOLERANCES UNLESS OTHERWISE SPECIFIED .X ± .01 .XX ± .005 ∠ ± 1°
SCALE FULL

TITLE ASSEMBLY LATCH SHAFT & FLAG

APPROVED [illegible] 3-31-[illegible]

DRAWING NO. D-200095

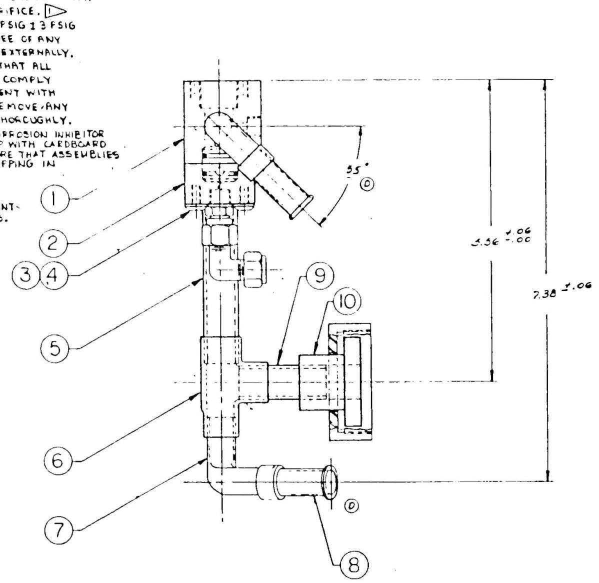
USED ON 200089 & 200105

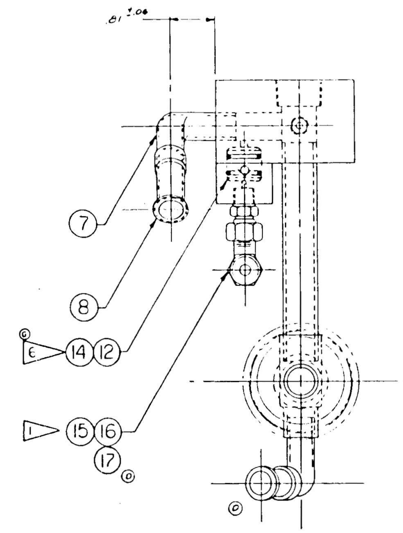
NOTES:

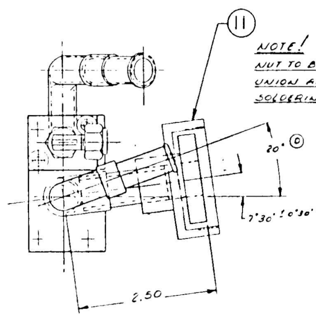
1.) USE OF THREAD SEALANT TO BE KEPT TO A MINIMUM. AVOID CONTAMINATION OF INTERNAL ORIFICE. 1
2.) PRESSURE TEST ASSEMBLIES AT 45 PSIG ± 3 PSIG
3.) ASSEMBLIES MUST BE CLEAN AND FREE OF ANY FOREIGN MATERIAL INTERNALLY AND EXTERNALLY.
4.) ASSEMBLIES MUST BE FLUSHED SO THAT ALL INTERIOR AND EXTERIOR SURFACES COMPLY WITH NOTE 3. USE A MILD DETERGENT WITH WATER, THEN A WATER RINSE TO REMOVE ANY DETERGENT RESIDUE, THEN DRY THOROUGHLY.
5.) WRAP EACH ASSEMBLY IN TREATED CORROSION INHIBITOR PAPER OR CLEAR PLASTIC SHRINK WRAP WITH CARDBOARD SUPPORT AFTER TESTING. MAKE SURE THAT ASSEMBLIES ARE THOROUGHLY DRY BEFORE WRAPPING IN PROTECTIVE PACKAGING.

(D)
6.) APPLY A THIN FILM OF O-RING LUBRICANT TO EXPOSED SURFACE OF BOTH O-RINGS.

DATE	SYM	REVISION RECORD	BY	CK
	A	RELEASED # 140		
	B			
	C	ADDED NOTE 1 CORRECTED PN FOR ITEM 3		
7/1/88	D	35° WAS 45° - 20° ANGLE ADDED. ITEM 13 REVISED - ITEM 17 ADDED		
	E	ITEM 12 WAS 5 PSI		
	F	ITEM 9 LG. WAS 1.38 LG. ADDED NOTES 2 THRU 5		
	G	ITEM 12 WAS PN 400207 REMOVED ITEM 13 ADDED NOTE 6		
	H	REVISED NOTE 5		







NOTE!
NUT TO BE ASSEMBLED OVER UNION AS SHOWN PRIOR TO SOLDERING UNION TO TUBE

SOFT SOLDER CONSTRUCTION
(B) LEAD FREE 95% TIN, 5% ANTIMONY

	ITEM	REQ	PART Nº	DESCRIPTION
(D)	17	1	400139	MALE TUBE ADAPTER - 1/8 NPT CAJON # B-4-TA-1-2
	16	A/R	A-400036	SEALANT - THREAD LOCTITE Nº 59231
(D)	15	1	400140	MALE ELBOW - 1/4 OD TUBE SWAGELOCK # B-400-9
	14	A/R	A-400035	LUBRICANT - O-RING PARKER - SUPER O - LUBE
(G)	13			
(E) (G)	12	1	A-400391	CHECK VALVE - CARTRIDGE TYPE - 6 PSI
	11	1	A-400061	NUT - RED VALVE CO. INC. PT. Nº 2501-0500 FURNISHED BY STERIS
	10	1	A-400062	UNION - RED VALVE CO INC. PT. Nº 2502-0500 FURNISHED BY STERIS
(F)	9	1	100250	COPPER TUBING - TYPE K .625 O.D. 1/2 NOM. 1.56 LG.
	8	2	A-100199	STUB TUBE
	7	2	100353	ELBOW - 90° - LONG RADIUS 3/8" MUELLER PT Nº W-2817
	6	1	100352	SOLDER JOINT COPPER TEE 1/2 x 3/8 x 1/2 C x C x C MUELLER PT. Nº W-4009
(F)	5	1	100315	COPPER TUBING - TYPE K .625 O.D. 1/2 NOM. 4.16 LG.
	4	2	B-450201	LOCKWASHER # 10 SPLIT
(C)	3	2	B-452007	SCREW, HEX SOC BUTTON HD. S.S # 10-32 UNF-2A x 1.00 LG.
	2	1	B-100239	VALVE BLOCK
	1	1	C-100351	DRAIN BLOCK

STERIS
CORPORATION

MATERIAL

TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ±0.01 .XXX ±0.005 X° ±1°

REQ'D

SCALE FULL

FINISH

TITLE ASSEMBLY DRAIN BLOCK

DRAWN STODDARD DATE 88

CHECKED

APPROVED T.TF 9 9 89

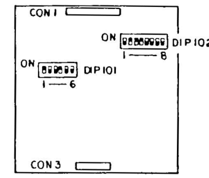
DRAWING NO D-200063

USED ON # D 200069 & 200169

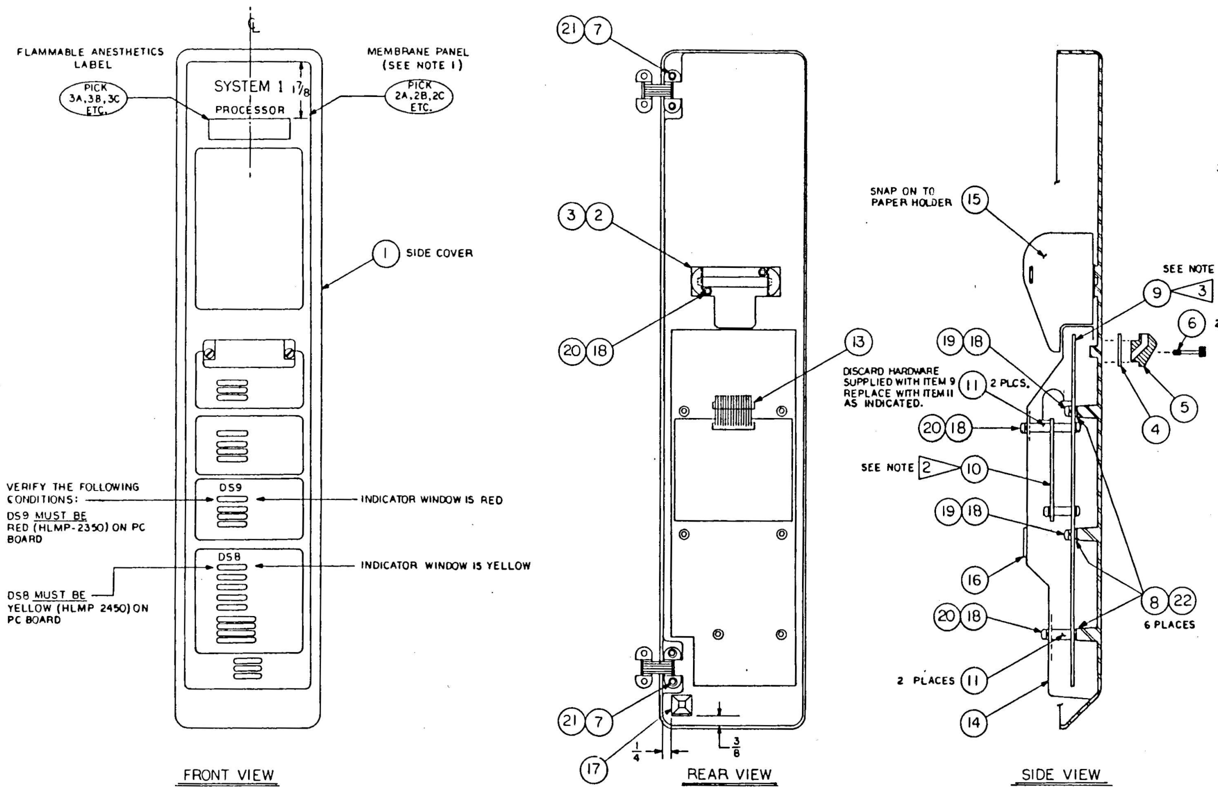
DATE	SYM	REVISION RECORD	DR	CK
[illegible]	A	RELEASE NO 553		
[illegible]	B	ADDED ENGLISH 50HZ		
[illegible]	C	ADDED ITALIAN & FRENCH		
[illegible]	D	ITEM 5 WAS P/N 300063 REMOVED [illegible]		
[illegible]	E	REPLACED PRINT/DISPLAY BOARD. WAS P/N 300077		
[illegible]	F	DASH NUMBER 300077-1 WAS UNACCEPTABLE		
[illegible]	G	DELETED ITEM 12 PART NO 200018 QTY. 1		
[illegible]	H	P/N B-451205 WAS P/N 451207 ITEM NO. 11		
[illegible]	J	ADDED SPANISH		

NOTES

1. ALIGN TRANSLUCENT INDICATOR WINDOWS IN MEMBRANE PANEL WITH CUTOUTS IN SIDE COVER. HOLD UP TO LIGHT SOURCE TO VERIFY ALIGNMENT. NO MISALIGNMENTS GREATER THAN 1/64" ARE ALLOWED.
2. ASSURE PROPER SWITCH SETTING BEFORE FINAL ASSEMBLY AND TEST



3. CHECK HARDWARE MOUNTING ITEM 10 TO ITEM 9 FOR PROPER TYPES AND TIGHTNESS.



B/M 200240 (USED ON 200238)
CONTROL PANEL ASSEMBLY (ITALIAN)

ITEM	QTY.	PART NO.	DESCRIPTION
1D	1	D-200211	CONTROL PNL., COMMON PARTS
2D	1	D-100660	MEMBRANE PANEL (ITALIAN)
3D	1	B-100665	LABEL, FLAMMABLE ANESTHETICS

B/M 200241 (USED ON 200239 & 200254)
CONTROL PANEL ASSEMBLY (FRENCH)

ITEM	QTY.	PART NO.	DESCRIPTION
1E	1	D-200211	CONTROL PNL., COMMON PARTS
2E	1	D-100510	MEMBRANE PANEL (FRENCH)
3E	1	B-100666	LABEL, FLAMMABLE ANESTHETICS

B/M 200230 (USED ON 200231 & 200187)
CONTROL PANEL ASSY. (ENGLISH 50Hz & 60Hz)

ITEM	QTY.	PART NO.	DESCRIPTION
1C	1	D-200211	CONTROL PNL. COMMON PARTS
2C	1	D-100636	MEMBRANE PANEL (ENGLISH EUROPEAN)
3C	1	B-400203	LABEL, FLAMMABLE ANESTHETICS

J
B/M 200370 (USED ON 200371)
CONTROL PANEL ASSEMBLY (SPANISH)

ITEM	QTY.	PART NO.	DESCRIPTION
1B	1	D-200211	CONTROL PNL., COMMON PARTS
2B	1	D-100511	MEMBRANE PANEL
3B	1	B-100778	LABEL, FLAMMABLE ANESTHETICS

B/M 200177 (USED ON 200186)
CONTROL PANEL ASSEMBLY (GERMAN)

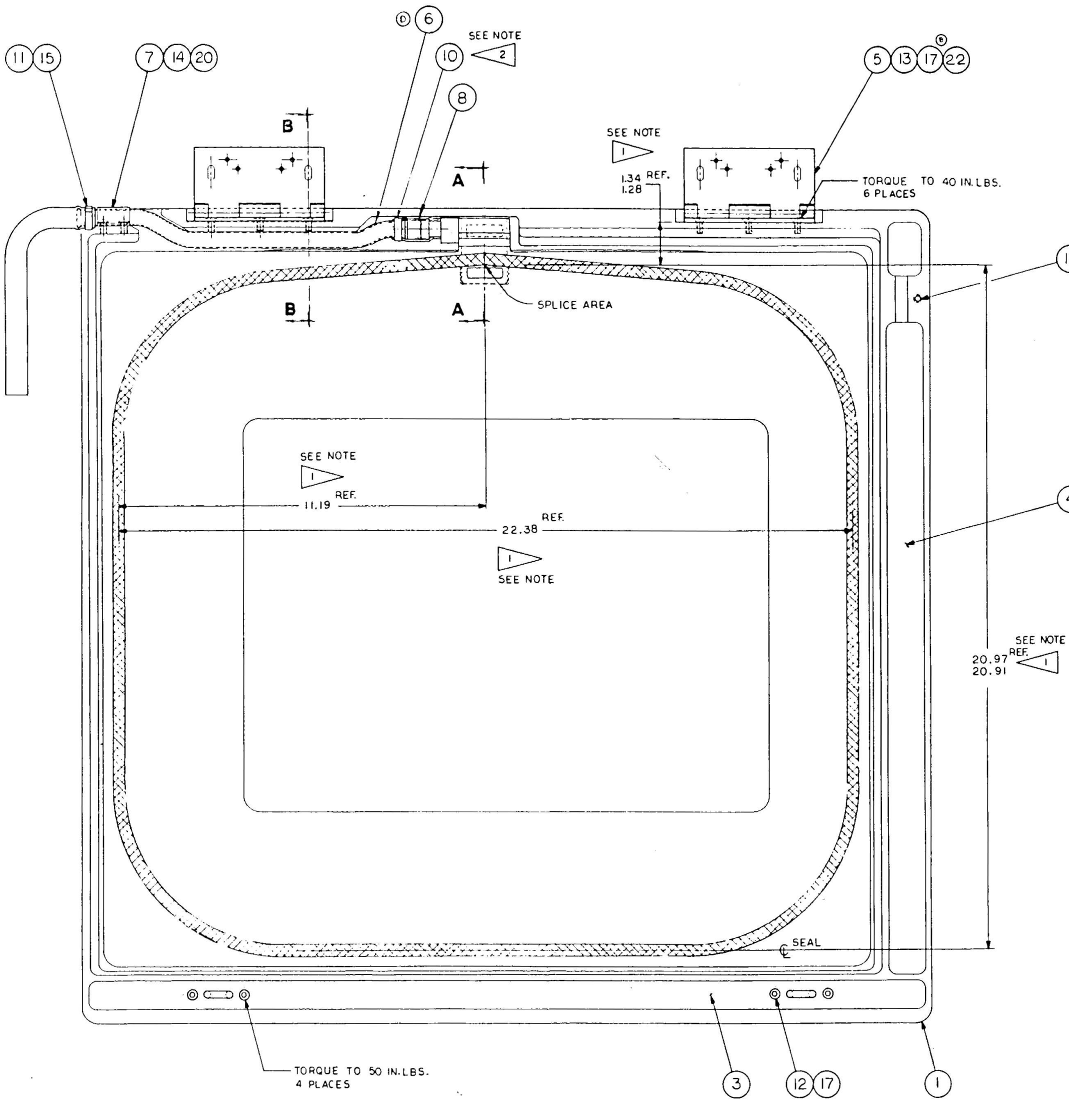
ITEM	QTY.	PART NO.	DESCRIPTION
1A	1	D-200211	CONTROL PNL., COMMON PARTS
2A	1	D-100509	MEMBRANE PANEL (GERMAN)
3A	1	B-100539	LABEL, FLAMMABLE ANESTHETICS

ITEM	QTY.	PART NO.	DESCRIPTION
27			
26			
25			
24			
23			
22	A/R	A-400134	ADHESIVE, CA40H
21	4	B-451800	SCREW, 6-32 X 3/8 LG.
20	6	B-451604	SCREW, 4-40 X 1/4 LG.
19	4	B-451602	SCREW, 4-40 X 3/8 LG.
18	10	B-450206	WASHER, # 4 LOCK
17	1	A-400037	MOUNT, ADHESIVE BACKED
16	1	A-400312	HOLE PLUG
15	1	C-100516	COVER PAPER ROLL
14	1	D-100515	COVER, P.C. BOARD
13	1	B-300012	CABLE ASSEMBLY
12			
11	4	B-451205	SPACER, 4-40 X 3/4
10	REF.	A-300022	PRINTER BOARD
9	1	D-300085	PRINTER/DISPLAY BOARD
8	6	B-450222	INSULATING WASHER
7	2	A-400023	HINGE
6	2	A-400266	CAPTIVE PANEL SCREW
5	1	B-100514	BEZEL
4	1	B-100518	GASKET
3	1	A-100105	SPINDLE
2	1	B-100517	PRINTER PAPER HOLDER
1	1	D-100540	SIDE COVER

STERIS
CORPORATION

MATERIAL: LISTED
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± .12
REQ'D: 1 PER
SCALE: —
FINISH:
DRAWN: R. [illegible] DATE: [illegible]
CHECKED: [illegible] 6-29-92
APPROVED: [illegible]
TITLE: CONTROL PANEL COMMON PARTS
DRAWING NO: D-200211

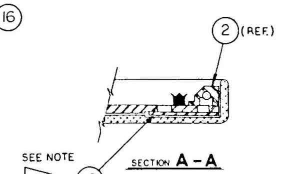
USED ON 200177, 178, 230, 240, 241



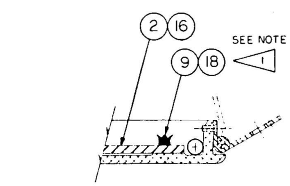
NOTES

1. REFER TO WINDOW, COVER PLATE AND UPPER SEAL GLUING PROCEDURE PER METHOD SHEET M200228 (E)
2. CLAMP (ITEM 10) MUST BE POSITIONED WITH EAR TOWARD REAR OF LID CASTING. CRIMP BEFORE TUBE INSTALLATION.
3. VOID AREA BENEATH HEADER BLOCK MUST BE FILLED WITH THE MINIMUM AMOUNT OF SILICONE SEALANT (ITEM 16) TO PROVIDE FULL SUPPORT THUS REMOVING THE POSSIBILITY OF FLEXING OR CRACKING DURING OPERATION.

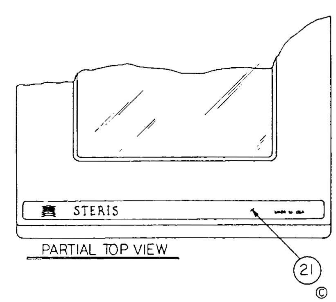
DATE	SYM	REVISION RECORD	DR	CK
[illegible]	A	RELEASE NO 568	[illegible]	
[illegible]	B	WAS ITEM 20	[illegible]	[illegible]
[illegible]	C	ADDED LOGO, ITEM 21	[illegible]	[illegible]
[illegible]	D	HEADER BLOCK REDESIGNED	[illegible]	[illegible]
[illegible]	E	Was A-600049 IN NOTE 1	[illegible]	[illegible]



SECTION **A – A**



SECTION **B – B**



PARTIAL TOP VIEW

ITEM	QTY.	PART NO	DESCRIPTION
22	A/R	A-400263	LOCTITE, PRIMER-T
21	1	D-100134	LABEL, STERIS LOGO
20	A/R	A-400032	ANTI-SEIZE COMPOUND
19	1	B-451903	SCREW, 8-32 X 1/4 SET
18	A/R	A-400134	ADHESIVE, CA40H
17	A/R	A-400034	ADHESIVE, LOC-TITE
16	A/R	A-400293	SEALANT, SILICONE
15	1	B-450302	VENT TUBE
14	2	B-452005	SCREW, 10-32 X 1/4 BUT. HD.
13	6	B-452004	SCREW, 10-32 X 1/2 FL. HD.
12	4	B-452001	SCREW, 10-32 X 1/2 BUT. HD.
11	1	B-450504	CLAMP
10	1	B-450511	CLAMP
9	1	B-100031	UPPER SEAL
8	1	A-100228	TUBE COUPLING
7	1	A-100117	TUBE CLAMP
6	1	C-100739	DRAIN TUBE
5	2	B-100601	HINGE
4	1	B 100616	LID COVER PLATE
3	1	C-200225	LATCH COVER PLATE
2	1	D-200138	VIEWING WINDOW ASSY.
1	1	D-100611	LID CASTING/MACHINING

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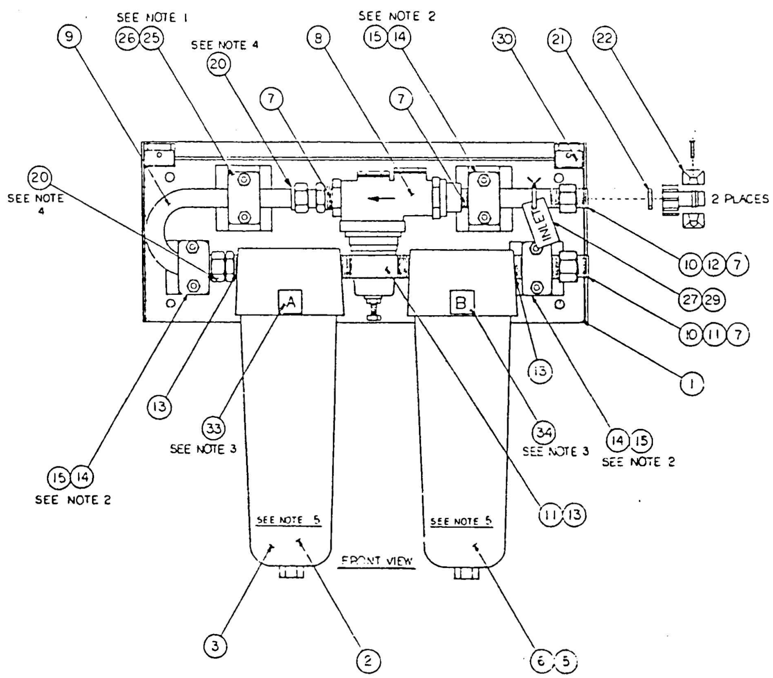
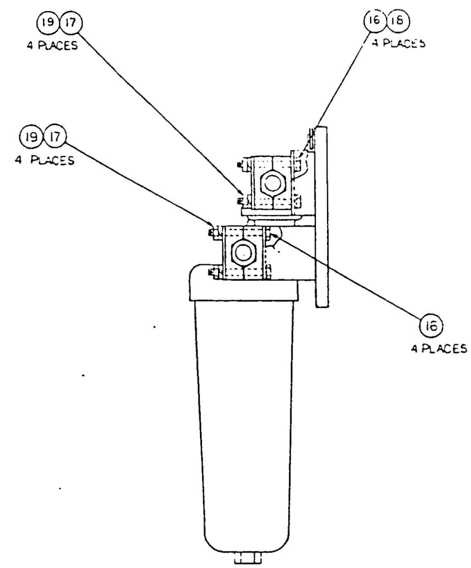
MATERIAL: LISTED
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± —; .XXX ± —; X° ± —
REQ'D: 1 PER
SCALE: NONE
FINISH: —
TITLE: LID ASSEMBLY
DRAWN: R. Schuman
CHECKED: 1-18-94
APPROVED
DRAWING NO. D-200228

USED ON 2002 AND 200169





NOTES

1. REQUIRES USE OF COVER PLATES ON TOP AND BOTTOM OF CLAMP.
2. REQUIRES USE OF COVER PLATE ON TOP OF CLAMP ONLY.
3. APPLY FILTER IDENTIFICATION LABELS, ITEMS 33 & 34 ON BOTH FRONT AND REAR OF FILTER HOUSINGS.
4. REFER TO SWAGELOK INSTALLATION INSTRUCTIONS FOR PROPER FITTINGS TIGHTNESS. REF PROCEDURE 600031.
5. EACH FILTER SUPPLIED WITH THIS ASSEMBLY CONTAINS A FILTER REPLACEMENT INSTRUCTION SHEET (P/N 600059). <u>BE SURE</u> WHEN FILTERS ARE REMOVED FROM ORIGINAL BOXES THAT THE INSTRUCTION SHEET <u>IS</u> REPACKED AND ACCOMPANIES <u>EACH</u> FILTER.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASED #596	04/20/92	RAS
	B	ADDED METHOD SHEET TO B/M RETURN ELBOW WAS A SUB-ASSEMBLY & CLARIFIED NOTE #4 ERO#1613	12/23/94	RAS
	C	REMOVED DWG SIZE(LETTERS) FROM P/N IN BOM, NOTE #6 FROM 1ZMP TO 1ZMP1, BACKGROUND REDRAWN ON ACAD ECO#.2067		

ITEM	QTY.	PART NO.	DESCRIPTION
35	REF	M200262	METHOD SHEET
34	2	100437	LABEL, FILTER IDENT. "B"
33	2	100436	LABEL, FILTER IDENT. "A"
32			
31			
30	2	400196	MAGNETIC CATCH
29	1	400166	TWIST-TIE
28			
27	1	100431	LABEL, INLET
26	2	400190	COVER PLATE, STANDARD
25	2	400189	CLAMP HALF, STANDARD
24			
23			
22	2	400072	HOSE COUPLING, FEMALE
21	2	400071	WASHER, HOSE
20	2	400290	MALE CONNECTOR
19	8	453006	NUT, HEX 1/4-20
18	4	450208	WASHER, FLAT 1/4
17	8	450207	WASHER, SPLIT LOCK 1/4
16	8	452104	SCREW, HEX HD. 1/4-20 x 2 1/4
15	3	400188	COVER PLATE, STANDARD
14	6	400187	CLAMP HALF, STANDARD
13	A/R	400150	PIPE THREAD SEAL TAPE
12	1	100426	BRASS PIPE, THREADED
11	2	100425	BRASS PIPE, THREADED
10	2	400192	ADAPTER
9	1	100541	RETURN ELBOW
8	1	400081	PRESSURE REGULATOR
7	A/R	400036	SEALENT
6	1	400158	2ND HOUSING CUNO MODEL 1ZMP1 TRANSPARENT SUMP
5	1	200210	PRE-FILTER CARTRIDGE B STERIS CATOLOG #A1504
4			
3	1	200209	PRE-FILTER CARTRIDGE A STERIS CATALOG #A1501
2	1	400160	1 ST HOUSING, CUNO MODEL 1M1 TRANSPARENT SUMP
1	1	100429	WELDMENT, PRE-FILTER MOUNTING PLATE

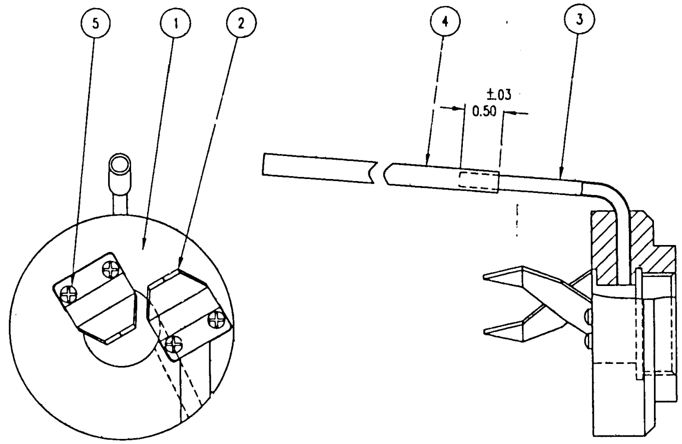
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/16, DECIMALS .XX ± 0.03, .XXX ± 0.015, ANGLES ±1°

STERIS Corporation Mentor, Ohio

DRAWN BY: RS	DATE: 04/29/92	ASSEMBLY DUAL PREFILTER, NO COVER	
CHECKED BY: KP	DATE: 04/29/92		
APPROVED BY: KS	DATE: 06/23/92	MATERIAL: LISTED	THICK: N/A
			COLOR: N/A
SIZE: D	PROJECT NO. 95017	PART NO. 200262	REV C
DO NOT SCALE DRAWING	SCALE 1=1		SHEET 1 OF 1

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION E.O. NO. 2776	5-6-94	W. KOCHTE
	D	REDRAWN ON AUTOCAD, ADDED STERIS LOGO AND MICRODIMENSION PART NO. E.C.N. NO. 2824	5-31-94	W. KOCHTE
	E	ITEM 6 WAS: MICRODIMENSION PART NO. 31M32200 STERIS PART NO. N/A IS: MICRODIMENSION PART NO. 31M32200, STERIS PART NO. M200108 ECN NO. 2902	7-12-94	W. KOCHTE
	F	ITEM 5 STERIS PART NO. WAS A-100448, IS NOW (1)B-451605; ITEM 4 STERIS PART NO. WAS B-100408 (2)IS NOW A-613008; ITEM 1 MICROD PART NO. WAS (3)28C13500, IS NOW 28D13500. ECN# 2930	7-22-94	



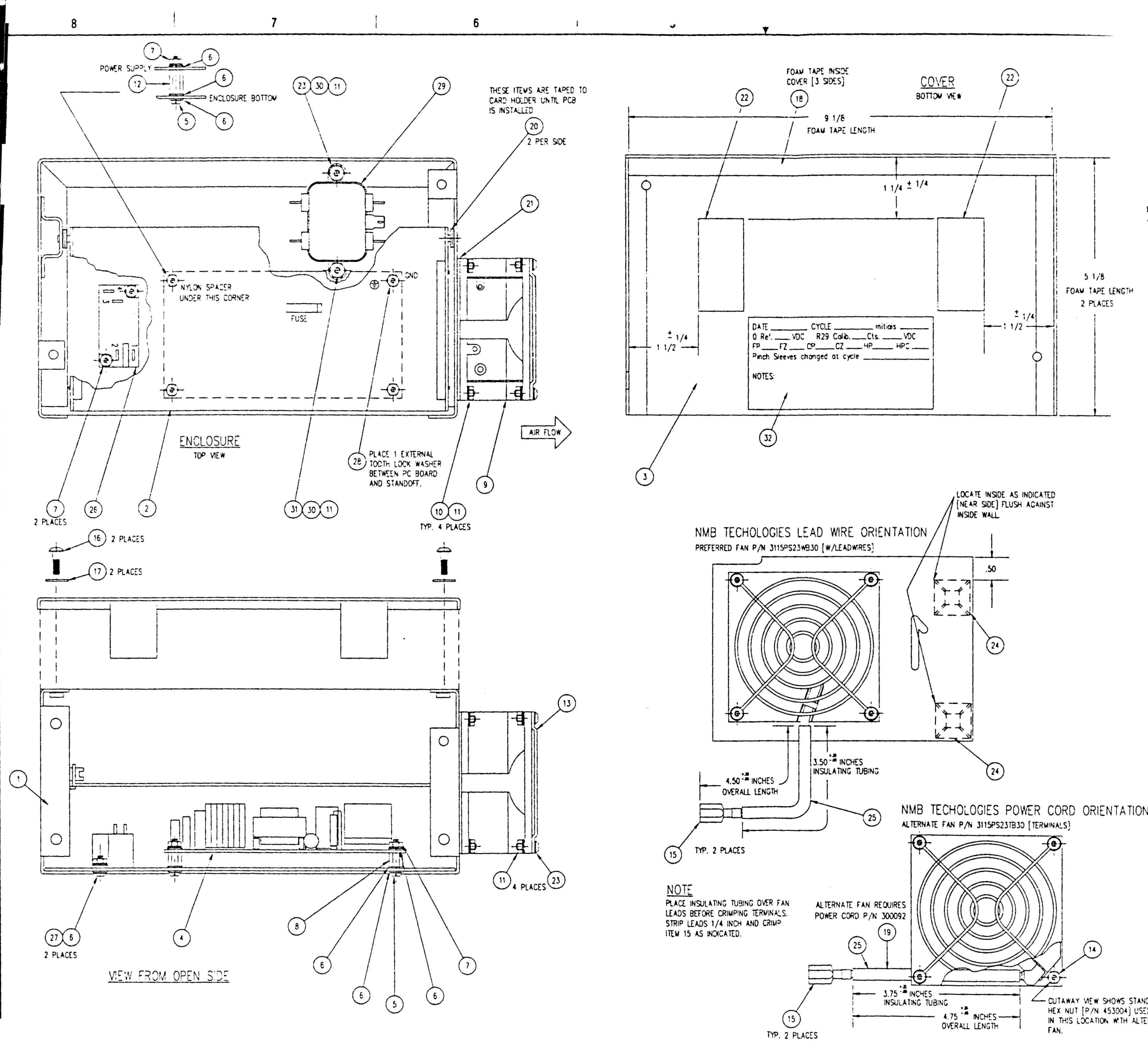
	ITEM	QTY	MICRODIMENSION PART NO.	STERIS PART NO.	DESCRIPTION
(E)	6	REF	31M32200	M200108	METHOD SHEET, S. A., CUP CUTTER BASE, SYSTEM 1
(F1)	5	4	20SK22PP	B-451605	SCREW, SS, #4-24 x 3/8", TYPE A ST, PH, PHILLIPS
(F2)	4	5.5 IN.	38A06000	A-613008	FLEXIBLE SILICONE TUBING 1/8" ID, 1/4" OD
	3	1	21B24300	B-100479	TUBE
	2	2	21B24400	B-100219	CUTTER, CUP
(F3)	1	1	28D13500	D-100478	CUTTER BASE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
±1/64 .XX±.010 ±0°30'
.XXX±.005

STERIS Corporation Mentor, Ohio

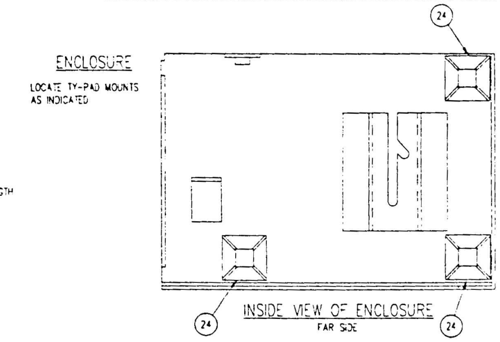
DRAWN BY D.E.M.	DATE 4-22-94	S. A., CUP CUTTER BASE, STERIS SYSTEM 1	
CHECKED BY D.E.M.	DATE 5-6-94		
APPROVED BY KOCHTE	DATE 5-6-94	MATERIAL SEE BILL	FINISH N/A
REVISION J. BEVAN	DATE 7-22-94	SHRINKAGE N/A	COLOR N/A
SIZE C	PROJECT NO. 93E034	MICRODIMENSION PART NO. 31C32200	STERIS PART NO. C-200108 REV. F
SCALE 1=1			SHEET 1 OF 1

DO NOT SCALE DRAWING



NOTE
PLACE INSULATING TUBING OVER FAN LEADS BEFORE CRIMPING TERMINALS. STRIP LEADS 1/4 INCH AND CRIMP ITEM 15 AS INDICATED.

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE TO PRODUCTION PEL 536	11-30-90	NLS
	B	ADDED LINE FILTER & HARDWARE ERO 1186	6-18-91	NLS
	C	CHANGED SCREW ON FILTER ERO 1240	2-19-92	KES
	D	ITEM 20 WAS 3.0" LONG	7-20-92	ARA
	E	REVISED LOCATION OF FOAM BLOCKS [ITEM 22] ERO 1323	8-25-92	KES
	F	ADDED SERVICE LABEL & ALTERNATE FANPOWER CORD ORIENTATION, REDRAWN ON AUTOCAD , ECO NO 1956	10-16-95	[illegible]

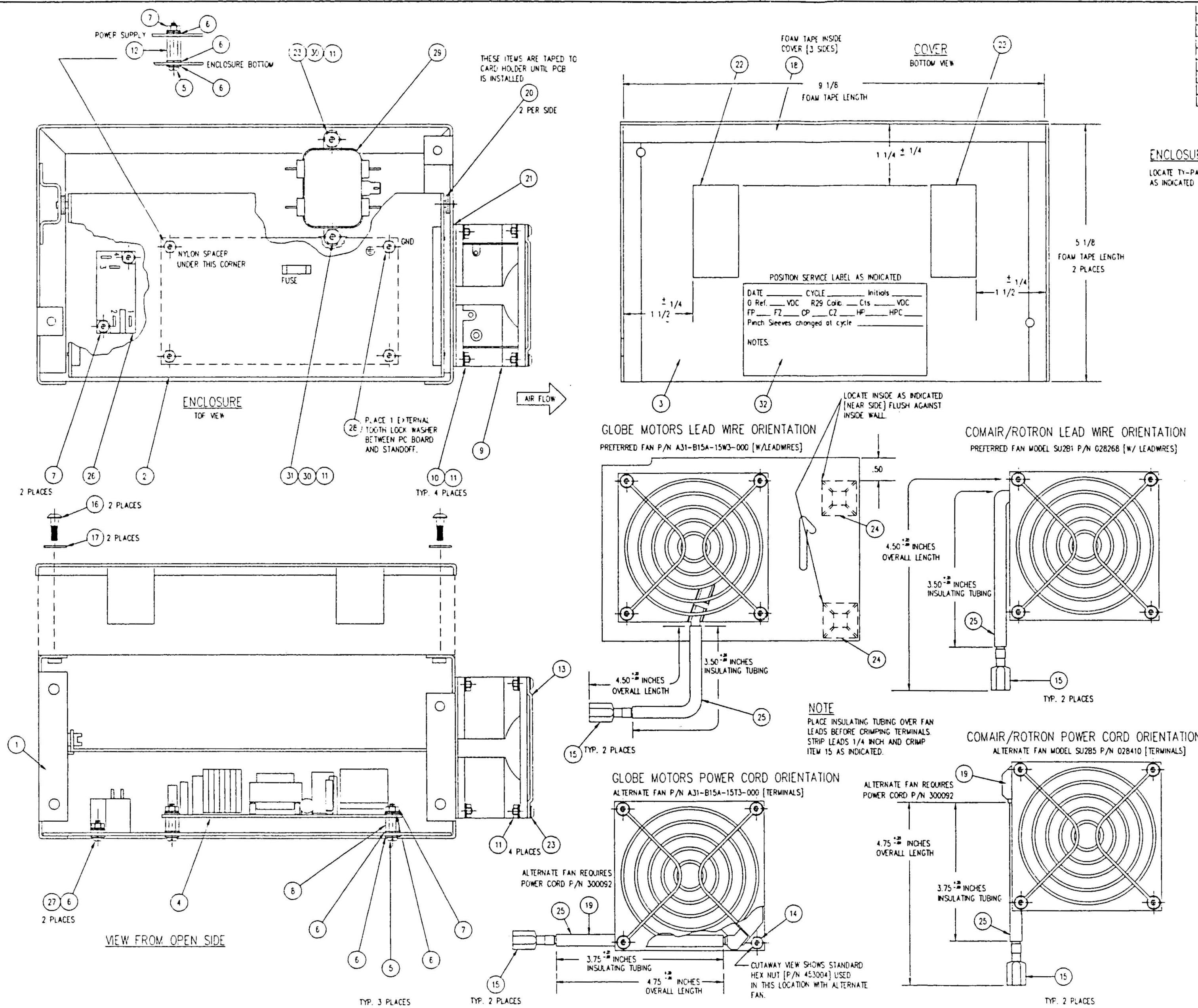


ITEM	QTY.	PART NO.	DESCRIPTION
33	REF.	M200184	ASSEMBLY METHOD SHEET
32	1	101012	LABEL, SERVICE
31	1	451806	SCREW, HEX. SOC. BT. HD. #6-32 X 1/4 SS
30	2	450205	WASHER, #6 FLAT, STAINLESS STEEL
29	1	500085	LINE FILTER
28	1	450217	WASHER, EXTERNAL TOOTH LOCK, #4 SS
27	2	451602	SCREW, HEX. SOC. BT. HD. #4-40 X 3/8 SS
26	1	500040	SOLID STATE RELAY
25	A/R	400193	INSULATING TUBING
24	5	400037	TY-PAD MOUNT, ADHESIVE BACKED
23	5	451802	SCREW, HEX. SOC. BT. HD. #6-32 X 3/8 SS
22	2	100345	FOAM BLOCK
21	1	100334	FAN SCREEN
20	4	450204	WASHER, INSULATING, .408 O.D., .177 I.D.
19	A/R	300092	POWER CORD
18	20"	400059	FOAM TAPE, 3/8 WIDE X 1/8 THICK
17	2	450203	WASHER, #8 FLAT STAINLESS STEEL
16	2	451904	SCREW, HEX. SOC. BT. HD. #8-32 X 1/2 LG. SS
15	2	550021	MALE COUPLER, FULLY INSULATED, .250 X .032
14	A/R	453004	NUT, #6-32
13	1	400057	FINGER GUARD
12	1	451203	SPACER, HEX #4-40 X 1/4 LG. NYLON
11	10	453001	NUT, #6-32 KEPS
10	4	451804	SCREW, FLAT HEAD, #6-32 X 1/2 LG. STAINLESS S
9	1	500065	COOLING FAN
8	3	451200	SPACER, HEX #4-40 X 1/4 LG
7	6	453000	NUT, #4-40 KEPS
6	14	450202	WASHER, #4 FLAT STAINLESS STEEL
5	4	451601	SCREW, PAN HEAD, #4-40 X 5/8 LG. STAINLESS S
4	1	500068	POWER SUPPLY
3	1	100242	COVER, ELECTRONIC ENCLOSURE
2	1	200039	ASSEM., ROTATING P.C. BOARD HOLDER
1	1	100542	ELECTRONIC ENCLOSURE

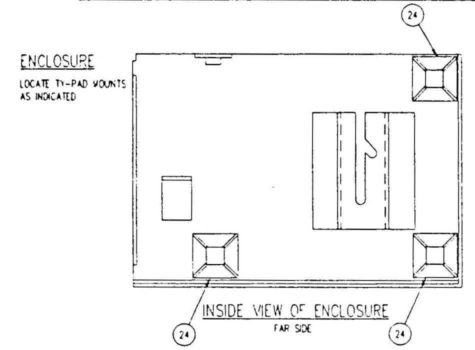
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE
FRACTIONS DECIMALS ANGLES
± 1/64 .XX ± .010 ±
.XXX ± .005

STERIS Corporation Mentor.

DRAWN BY: RAS	DATE: 11-30-90	ASSEMBLY ELECTRONIC ENCLOSURE	
CHECKED BY: NLS	DATE: 11-30-90		
APPROVED BY: [illegible]	DATE: 10/16/95	MATERIAL: LISTED	TYPE: -
REVISION: [illegible]	DATE: 10/11/95		COLOR:
SIZE: D	PROJECT NO.: 95018	PART NO.: 200184	
DO NOT SCALE DRAWING	SCALE: 1=1		SHEET 1 OF



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE TO PRODUCTION PCL 536	11-30-90	NLS
	B	ADDED LINE FILTER & HARDWARE ERO 1186	6-18-91	NLS
	C	CHANGED SCREW ON FILTER ERO 1240	2-19-92	KES
	D	ITEM 20 WAS 3.0" LONG	7-20-92	ARW
	E	REVISED LOCATION OF FOAM BLOCKS [ITEM 22] ERO 1323	8-25-92	KES
	F	ADDING SECOND SOURCE FAN REQ'D MORE DETAIL ERO 1326	10-20-92	RCS
	G	ADDED SERVICE LABEL & REDRAWN ON AUTOCAD. ECO NO. 1956	10-16-95	



ITEM	QTY.	PART NO.	DESCRIPTION
33	REF.	M200185	ASSEMBLY METHOD SHEET
32	1	101012	LABEL, SERVICE
31	1	451808	SCREW, HEX SOC. BT. HD. #6-32 X 1/4 SS
30	2	450205	WASHER, #6 FLAT, STAINLESS STEEL
29	1	500088	LINE FILTER
28	1	450217	WASHER, EXTERNAL TOOTH LOCK, #4 SS
27	2	451602	SCREW, HEX. SOC. BT. HD. #4-40 X 3/8 SS
26	1	500040	SOLID STATE RELAY
25	A/R	400193	INSULATING TUBING
24	5	400037	TY-PAD MOUNT, ADHESIVE BACKED
23	5	451802	SCREW, HEX. SOC. BT. HD. #6-32 X 3/8 SS
22	2	100345	FOAM BLOCK
21	1	100334	FAN SCREEN
20	4	450204	WASHER, INSULATING, .408 O.D., .177 I.D.
19	A/R	300092	POWER CORD
18	20"	400059	FOAM TAPE, 3/8 WIDE X 1/8 THICK
17	2	450203	WASHER, #8 FLAT STAINLESS STEEL
16	2	451904	SCREW, HEX. SOC. BT. HD. #8-32 X 1/2 LG. SS
15	2	550021	MALE COUPLER, FULLY INSULATED. .250 X .032
14	A/R	453004	NUT, #6-32
13	1	400057	FINGER GUARD
12	1	451203	SPACER, HEX #4-40 X 1/4 LG. NYLON
11	10	453001	NUT, #6-32 KEPS
10	4	451804	SCREW, FLAT HEAD, #6-32 X 1/2 LG. STAINLESS STEEL
9	1	500037	COOLING FAN
8	3	451200	SPACER, HEX #4-40 X 1/4 LG.
7	6	453000	NUT, #4-40 KEPS
6	14	450202	WASHER, #4 FLAT STAINLESS STEEL
5	4	451601	SCREW, PAN HEAD, #4-40 X 5/8 LG. STAINLESS STEEL
4	1	500068	POWER SUPPLY
3	1	100242	COVER, ELECTRONIC ENCLOSURE
2	1	200039	ASSEM., ROTATING P.C. BOARD HOLDER
1	1	100542	ELECTRONIC ENCLOSURE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± 1/64; DECIMALS .XX ± .010, .XXX ± .005; ANGLES ±

STERIS Corporation Mentor, Ohio

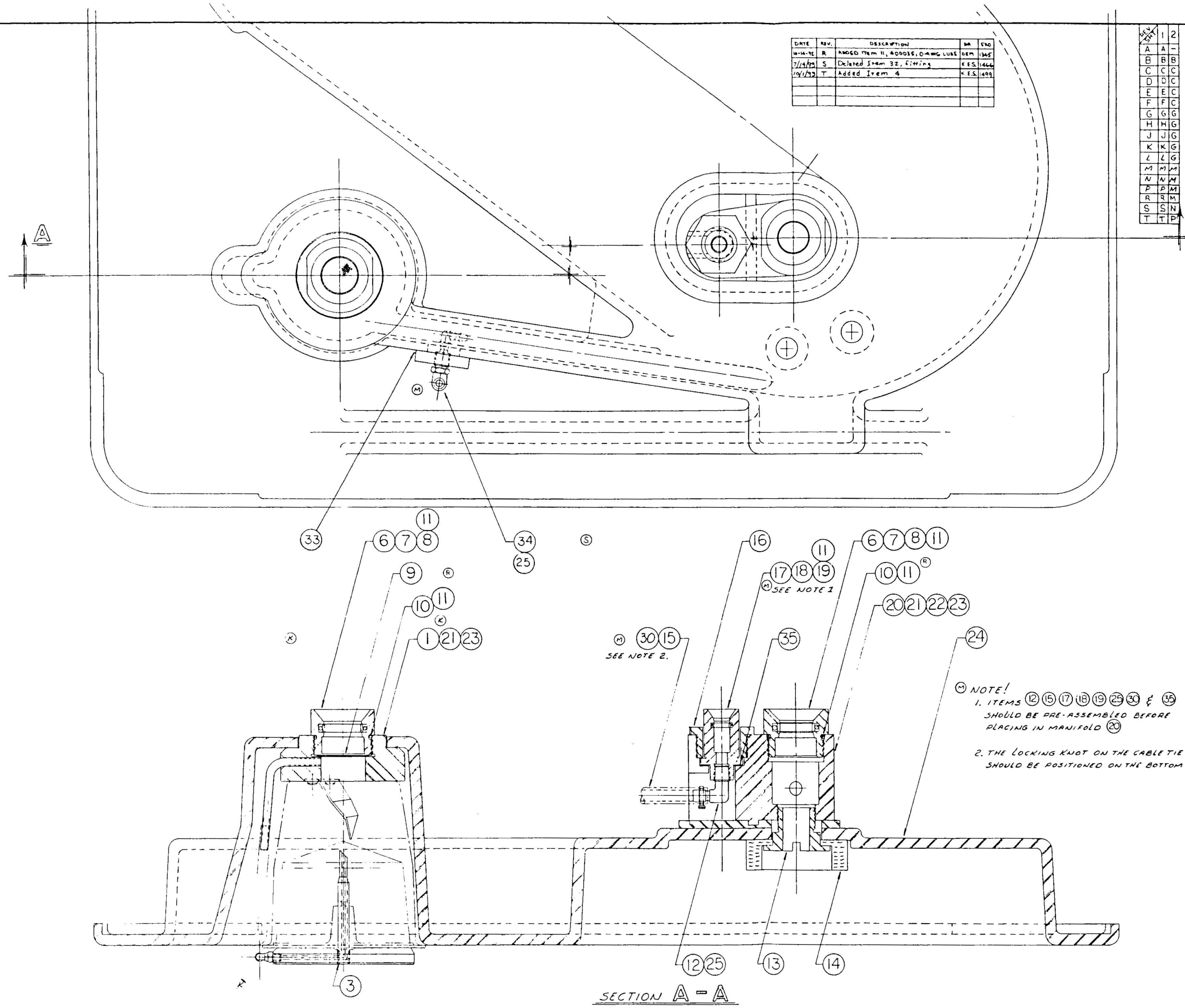
DRAWN BY: RAS DATE: 11-30-90
CHECKED BY: NLS DATE: 11-30-90

ASSEMBLY
ELECTRONIC ENCLOSURE

MATERIAL: LISTED
FINISH: -

SIZE: D PROJECT NO: 95018 PART NO: 200185 REV: G

DO NOT SCALE DRAWING SCALE 1=1 SHEET 1 OF 1



DATE	REV.	DESCRIPTION	DR	STO
10-14-92	R	ADDED ITEM 11, 400035, O-RING LUBE	DEM	1345
7/14/93	S	Deleted Item 32, fitting	K.E.S.	1466
10/1/93	T	Added Item 4	K.E.S.	1499

REV / SHT	1	2
A	A	–
B	B	B
C	C	C
D	D	C
E	E	C
F	F	C
G	G	G
H	H	G
J	J	G
K	K	G
L	L	G
M	M	M
N	N	M
P	P	M
R	R	M
S	S	N
T	T	P

DATE	SYM	REVISION RECORD	DR	CK
4-17-89	G	ITEM 12 WAS A-400135 ITEM 13 WAS B-100406 ITEM 32 WAS 2 REQ'D ITEM 34 ADDED	RES	
JUNE 7,89	H	ITEM 35 ADDED	JG	
JUNE 12,89	J	ITEM 3 WAS C-200093 ITEM 5 WAS B-100221	JG	
JULY 12, 89	K	REMOVED ITEMS 1, 2 & 11 - CUP CUTTER ASSMY ADDED, ITEM 1	RES	
10-23 89	L	ITEM 30 WAS A-400001	RES	
10-24 89	M	REDESIGNED ITEM 20, ADDED NOTE 1 & 2, REPOSITIONED FITTING	RES	
11/12/90	N	PICTORIAL CHG. TO ITEM 1	RES	
11/13/90	P	ITEM 17 WAS 100366 MATERIAL WAS STN. STL.	RES	[illegible]

DATE	SYM	REVISION RECORD	DR	CK
9/6/85	A	RELEASED #188	JRS	
12/10/85	B	ADDED ITEMS 26 THRU 29	JRS	
MAR 7 1989	C	ITEM 12 WAS A-400125 ITEM 13 WAS B-100276 ITEM 27 QUAN WAS 4 ITEM 28 WAS B-100279 ITEM 29 WAS B-100273 ADDED ITEMS 30 THRU 33 ADDED SEC A-A SH. E	JLG	
3/27/89	D	ITEM #3 WAS C-200033	JG	
4/7/89	E	ITEM #33 WAS 400042	JG	
4/13/89	F	ITEM #10 WAS 450600	JG	

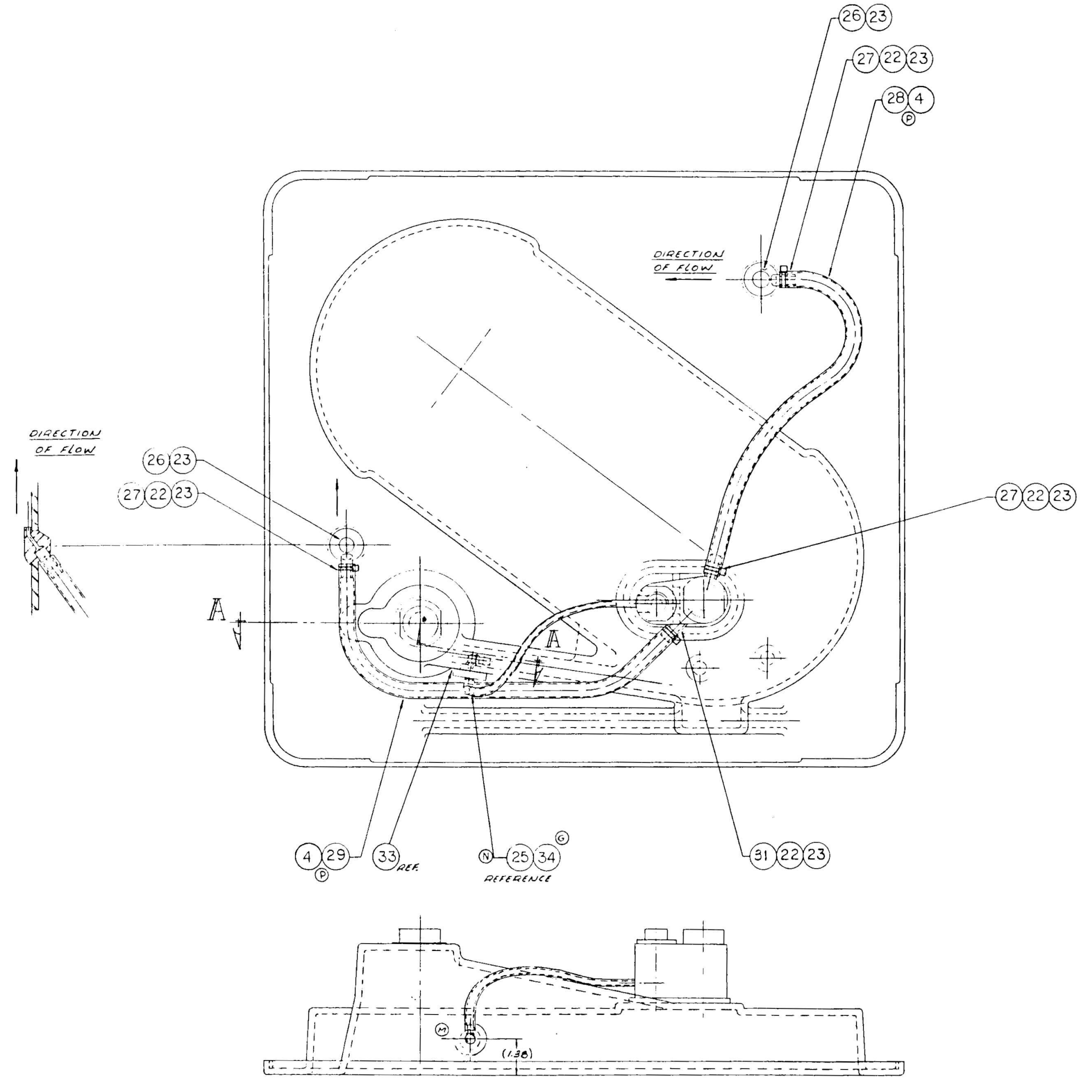
	ITEM	REQD	PART NO.	DESCRIPTION
H	35	1	A-100444	WAVE SPRING H.P.
G	34	1	B-200094	ASSMY-FTG/INSERT
E	33	A/R	A-400034	ADHESIVE, REZ-N-BOND
G S	32			
C	31	1	B-100388	BARB, LONG SPRAY HEAD
L	30	2	A-400237	CABLE TIE
C	29	1	B-100297	REINFORCED SILICONE HOSE .38 I.D. - .75 O.D. x 17.75 LG. FLEX FAB #FLX 5521-0006
C B	28	1	B-100296	REINFORCED SILICONE HOSE .38 I.D. - .75 O.D. x 15.00 LG. FLEX FAB #FLX 5521-0006
C	27	3	B-100347	BARB, SPRAY HD. HOSE
	26	2	C-100254	HEAD, SPRAY
	25	A/R	400036	THREAD SEALANT LOCTITE Nº 59231
	24	1	D-200074	SPRAY MANIFOLD SHIM ASSEMBLY
	23	A/R	400086	MULTI-PURPOSE CEMENT #43692 ACE HARDWARE
	22	A/R	400085	PRIMER # 43623 ACE HARDWARE
	21	A/R	400084	CLEANER # 44393 ACE HARDWARE
M	20	1	C-100361	MANIFOLD, SPRAY HD.
	19	1	B-450610	O-RING
	18	1	A-400082	GLYDE RING
P	17	1	C-100504	DROGUE, HIGH PRESS.
	16	1	B-100339	NUT, DROGUE-H.P.
G C	15	1	B-100407	TUBING, SILICON
	14	1	B-100209	BUSHING, SILICONE DRAIN
	13	1	B-100367	NUT, BLOCKER LOCK
G C	12	1	A-400125	DUBL-BARB FTG.-MALE ELBOW
R K	11	A/R	A-400035	O-RING LUBRICANT
F	10	2	450616	O-RING
	9	1	B-100168	SCREEN, FILTER
	8	2	450601	O-RING
	7	2	400020	GLYDE RING
	6	2	C-100348	DROGUE - Q.D.
J	5			
T K	4	4	A-400001	CABLE TIE (TY WRAP)
J D	3	1	B-200252	ASPIRATOR ASSEMBLY
K	2			
K	1	1	C-200108	CUP CUTTER ASSEMBLY
	○	REQD	PART NO.	DESCRIPTION

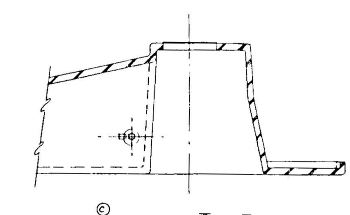
STERIS
CORPORATION

MATERIAL	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .XXX ± X° ±	REQ'D	SCALE FULL
FINISH		TITLE ASSEMBLY RIGID ADAPTER	
DRAWN [signature]	DATE 10-12-88		
CHECKED [signature]	10-4-93	DRAWING NO. D-200068	
APPROVED TJF	10-24-93		

SHEET 1 OF 2

DATE	SYM	REVISION RECORD	DR	CK
[illegible]	B	RELEASED # 200	[illegible]	
[illegible]	C	SEE SH 1 OF 2	[illegible]	
[illegible]	D	SEE SH 1 OF 2	[illegible]	
[illegible]	E	SEE SH 1 OF 2	[illegible]	
[illegible]	F	SEE SH 1 OF 2	[illegible]	
[illegible]	G	ADDED ITEM 34	[illegible]	
[illegible]	M	REPOSITIONED FITTING	[illegible]	
[illegible]	N	Deleted (32) ERO 1466	[illegible]	
9/93	P	Added (4) ERO 1499	[illegible]	





SECTION A-A
ROTATED 180° C.W.

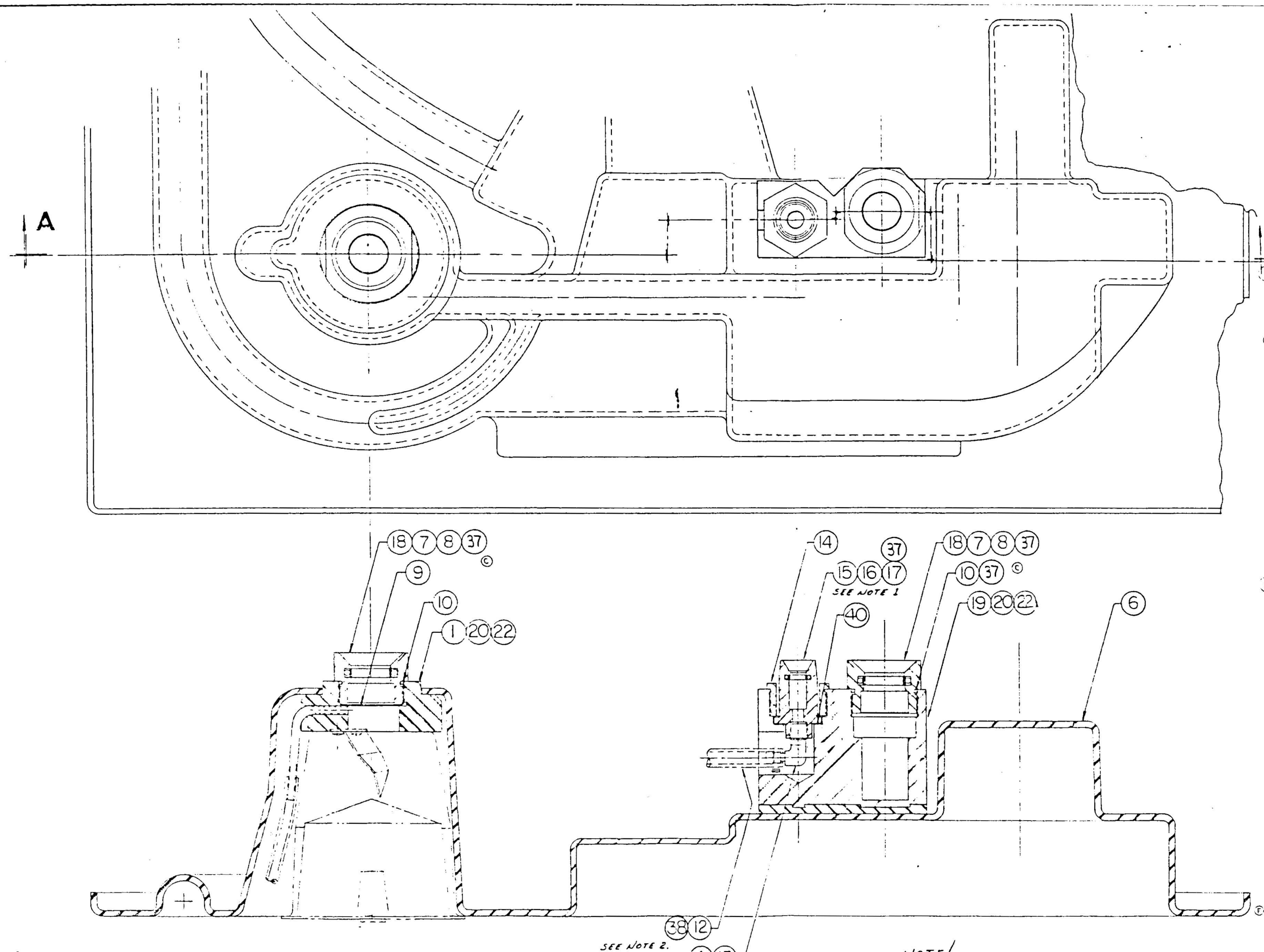
NOTE;
CARE SHOULD BE TAKEN DURING ASSEMBLY THAT THE SPRAY HEADS (ITEM 26) ARE POSITIONED AS SHOWN WHEN APPLYING THE MULTI-PURPOSE CEMENT.

STERIS
CORPORATION

MATERIAL	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .XXX ± X° ±	REQ'D
FINISH	TITLE ASSEMBLY RIGID ADAPTER	SCALE HALF
DRAWN [illegible] DATE 10-[illegible]-88		
CHECKED J. Wi[illegible] 10-4-93	DRAWING NO D-200068	
APPROVED TJF 10-[illegible]		

SHEET 2 OF 2

DATE	SYM	REVISION RECORD	DR	CK
[illegible]	A	RELEASE NO. 565	[illegible]	
[illegible]	B	IT 3 [illegible]	[illegible]	[illegible]
[illegible]	C	ADDED ITEM 37	[illegible]	[illegible]
[illegible]	D	Added Item 2	[illegible]	[illegible]
[illegible]	E	REMOVED ITEM [illegible] ADDED METHOD SHEET [illegible] [illegible]	[illegible]	[illegible]
[illegible]	F	REMOVE ITEM 3	[illegible]	[illegible]



41	REF.	M200224	METHOD SHEET
40	1	100444	WAVE SPRING H.P.
39	1	400180	COUPLING BODY - .13 FLOW .250 MNPT WITHOUT SHUT-OFF
38	8	400237	CABLE TIE
37	A/R	400035	O-RING LUBRICANT
36	1	400322	TY-WRAP MOUNT
35			
34	1	400179	TUBING "Y" CONNECTOR
33	2	100400	SCHEDULED TUBE, SILICONE
32	1	100389	MANIFOLD "A" .052"
31			
30	1	400167	COUPLING BODY - .13 FLOW .250 MNPT W/SHUT-OFF
29	1	100383	MANIFOLD "B" .081"
28			
27	10	100347	BARB, SPRAY HEAD
26	2	100346	HEAD, SPRAY MODIFIED
25	72.5"	613000	HOSE, REINFORCED 3/8 I.D.
24			
23	8	100254	HEAD, SPRAY
22	A/R	400086	MULTI-PURPOSE CEMENT ACE HARDWARE # 43692
21			
20	A/R	400084	CLEANER # 44393 ACE HARDWARE
19	1	100605	MANIFOLD - SPRAY HEAD
18	2	100348	DROGUE - Q.D.
17	1	450610	O-RING
16	1	400082	GLYDE RING
15	1	100504	DROGUE - HIGH PRESS.
14	1	100339	NUT DROGUE HIGH PRESSURE
13	1	400125	DUAL-BARB FTG. MALE ELBOW
12	1	100400	TUBING - FLEXIBLE 3½"
11			
10	2	450616	O-RING
9	1	100168	SCREEN, FILTER
8	2	450601	O-RING
7	2	400020	GLYDE RING
6	1	200223	SPRAY MANIFOLD SHIM ASSEMBLY
5			
4	A/R	400036	THREAD SEALANT LOCTITE Nº 59231
3			
2	10	400001	CABLE TIE (TY-WRAP)
1	1	200108	CUP CUTTER ASSEMBLY
○	REQ'D	PART NO.	DESCRIPTION

NOTE!
1. ITEMS 4 12 13 - 15 16 17 39 & 40 SHOULD BE PRE-ASSEMBLED BEFORE PLACING IN MANIFOLD 19
2. THE LOCKING KNOT ON THE CABLE TIE 38 SHOULD BE POSITIONED ON THE BOTTOM AS SHOWN.-

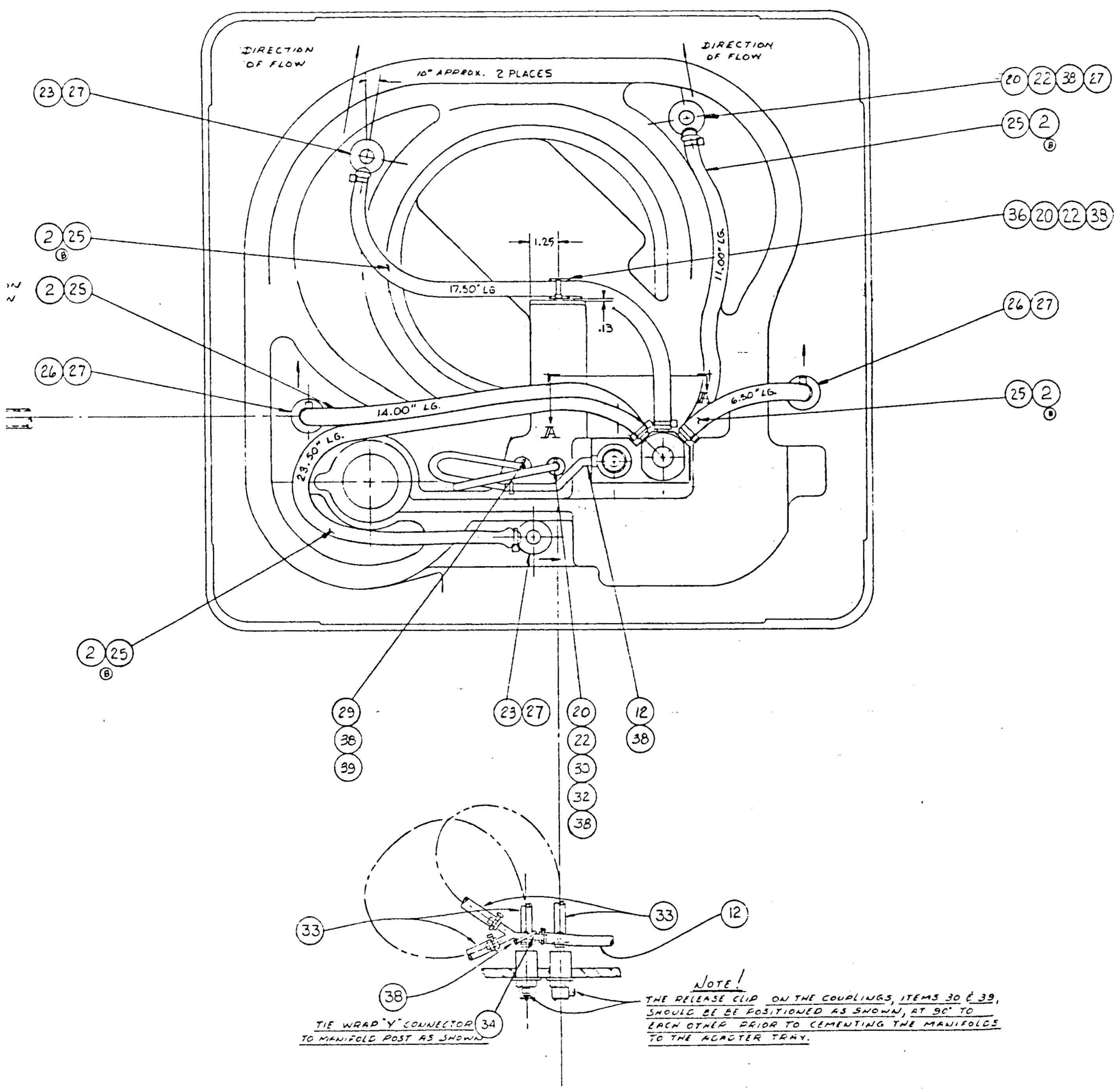
SECTION A-A

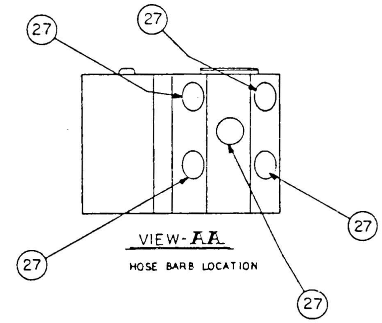
STERIS
CORPORATION

MATERIAL: SEE B/M
TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± .XXX ± ∠ ±
REQ'D: 1
SCALE: FULL
FINISH:
TITLE: ASSEMBLY, OLYMPUS/PENTAX FLEXIBLE ADAPTER
DRAWN: P. Schempp DATE: [illegible]
CHECKED:
APPROVED:
DRAWING NO. 200224

SHEET 1 OF 2

DATE	SYM	REVISION RECORD	DR	CK
[illegible]	A	RELEASE NO.565	[illegible]	
[illegible]	B	Added (B) ERO# 1499	[illegible]	
[illegible]	C	SEE SHEET 1 OF 2	[illegible]	





VIEW-AA

HOSE BARB LOCATION

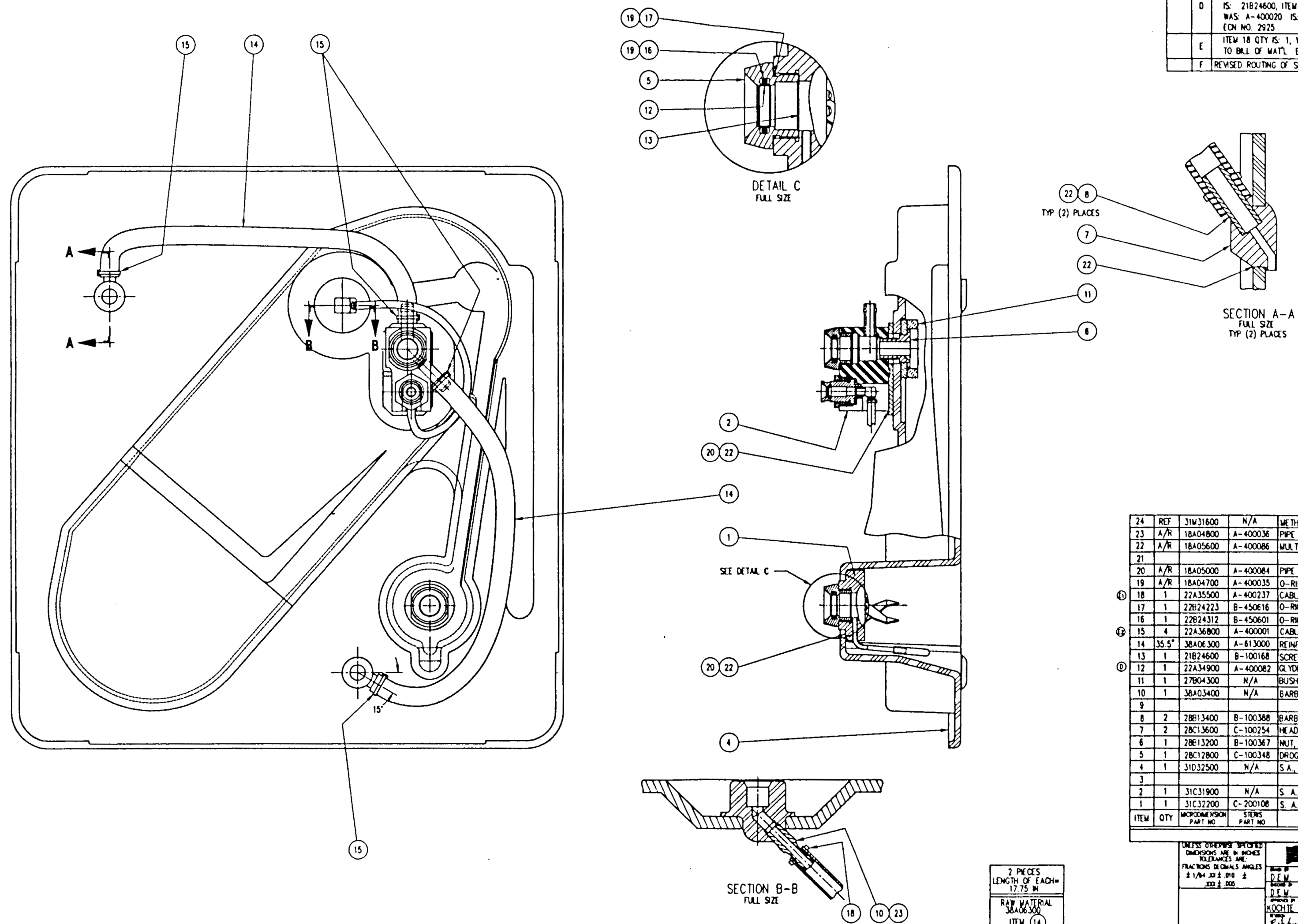
NOTE;
CARE SHOULD BE TAKEN DURING ASSEMBLY THAT THE SPRAY HEADS ITEMS 23 & 26 ARE POSITIONED AS SHOWN WHEN APPLYING THE MULTI-PURPOSE CEMENT.

7.23

STERIS
CORPORATION

MATERIAL: SEE B/M SH 1 OF 2	TOLERANCES UNLESS OTHERWISE SPECIFIED .XX ± .25 .XXX ± ° ±
REQ'D: 1	SCALE: [illegible]
FINISH	TITLE: ASSEMBLY, OLYMPUS/PENTAX FLEXIBLE ADAPTER
DRAWN: R. Schiemann	DATE: [illegible]
CHECKED	DRAWING NO. -200224
APPROVED: [illegible]	

SHEET 2 OF 2



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION E.O. NO. 2776	5-6-94	W. KOCHTE
	B	ADDED STERIS LOGO, ADDED STERIS PART NO'S TO B/M, E.C.N. NO.2823	6-2-94	W. KOCHTE
	C	1 ITEM No. 4 PART No. WAS 28D08200 2 ITEM No. 18 PART No. WAS 22A03100 3 DELETED ITEM No. 21 ECN #2871	7-7-94	W. KOCHTE
	D	IN BILL OF MATERIAL ITEM 13 MICRO-DIMENSION PART NO. WAS: 21A24600 IS: 21B24600, ITEM 12 STERIS PART NO. WAS: A-400020 IS: A-400082 ECN NO. 2925	7-22-94	W. KOCHTE
	E	ITEM 18 QTY IS: 1, WAS: 5 ADDED ITEM 15 TO BILL OF MAT'L ECN NO. 3123	9-15-94	W. KOCHTE
	F	REVISED ROUTING OF SILICONE TUBING ECO # 1781	7-11-95	RC

	ITEM	QTY	MICRODIMENSION PART NO	STERIS PART NO	DESCRIPTION
	24	REF	31M31600	N/A	METHOD SHEET, S. A., DIR. FLOW TRAY ADAPTER
	23	A/R	18A04800	A-400036	PIPE THREAD SEALANT/LOCKER
	22	A/R	18A05600	A-400086	MULTI-PURPOSE CEMENT, PVC-CPVC-ABS-STYRENE
	21				
	20	A/R	18A05000	A-400084	PIPE CLEANING AGENT ABS/PVC/CPVC
	19	A/R	18A04700	A-400035	O-RING LUBRICANT, SILICONE
E1	18	1	22A35500	A-400237	CABLE TIE, SMALL-SHORT
	17	1	22B24223	B-450616	O-RING, SILICONE, .103 NOM WIDTH, 1.174 ID
	16	1	22B24312	B-450601	O-RING, SILICONE, .139" NOM WIDTH, .859 ID
E2	15	4	22A36800	A-400001	CABLE TIE (3.9")
	14	35.5"	38A06300	A-613000	REINFORCED SILICONE TUBING 3/8" I.D., 3/4" O.D.
	13	1	21B24600	B-100168	SCREEN, FILTER
D	12	1	22A34900	A-400082	GLYDE RING
	11	1	27B04300	N/A	BUSHING, DRAIN
	10	1	38A03400	N/A	BARB FTG., STRAIGHT, 3/16 I.D. x 1/16 NPT MALE
	9				
	8	2	28B13400	B-100388	BARB, LONG, SPRAY HEAD
	7	2	28C13600	C-100254	HEAD, SPRAY, SYSTEM 1
	6	1	28B13200	B-100367	NUT, BLOCKER LOCK
	5	1	28C12800	C-100348	DROGUE, QUICK-DISCONNECT, SYSTEM 1
	4	1	31D32500	N/A	S.A., DIRECTED FLOW CASSETTE TRAY - STERIS SYSTEM 1
	3				
	2	1	31C31900	N/A	S. A., SPRAY MANIFOLD, RIGID ADAPTER, SYSTEM 1
	1	1	31C32200	C-200108	S. A., CUP CUTTER BASE, SYSTEM 1

2 PIECES
LENGTH OF EACH= 17.75 IN

RAW MATERIAL 38A06300
ITEM 14

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± 1/64 .XX ± .010 ±
.XXX ± .005

STERIS Corporation Mentor, Ohio

DRAWN BY D.E.M.	DATE 4-25-94
CHECKED BY D.E.M.	DATE 5-6-94
APPROVED BY KOCHTE	DATE 5-6-94
REVISED P. Schuman	DATE 7/11/95

S. A., DIRECTED FLOW TRAY ADAPTER
STERIS SYSTEM 1

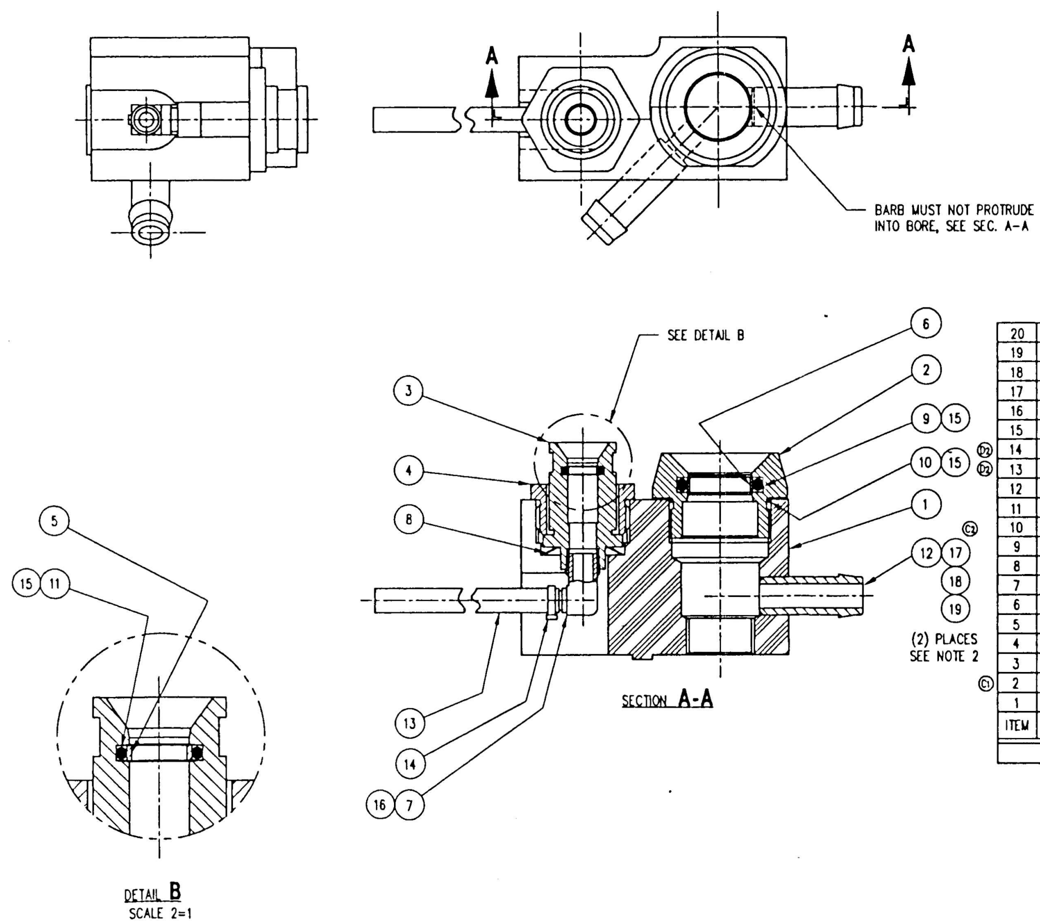
MATERIAL: SEE BILL OF MATERIAL	FINISH: N/A
N/A	COLOR: N/A

SIZE D | PROJECT NO. 93E034 | PART NO. 31D31600 | REV. F

DO NOT SCALE DRAWING | SCALE 1=2 | SHEET 1 OF 1

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION EO #2776	5-6-94	W.KOCHTE
	B	ADDED STERIS PART NO's TO BILL OF MATERIAL ADDED STERIS LOGO ECN # 2823	5-23-94	W. KOCHTE
	C	(1) "DROGUE" WAS MISPELLED IN BILL OF MATERIAL DESCRIPTION FOR ITEMS 2, 3, 4 & 6 (2) TRIANGLES REPLACED WITH BALLOONS ON ITEMS 15, 16, 17, 18 & 19 ECN NO. 2889	7-11-94	W. KOCHTE
	D	(1) ITEM 14 CHANGED MICROD PART NO. FROM 22A03100 TO 22A35500 & ITEM 13 STERIS PART NO. (2) FROM B-100407 TO A-613006 ECN# 2927	7-21-94	RC



	ITEM	QTY	MICRODIMENSION PART NO.	STERIS PART NO.	DESCRIPTION
	20	REF	31M31900	N/A	METHOD SHEET, S. A., SPRAY MAN., RIGID ADAPTER
	19	A/R	18A05600	A-400086	MULTI-PURPOSE CEMENT, PVC-CPVC-ABS-STYRENE
	18	A/R	18A05500	A-400085	PRIMER, PVC, CPVC
	17	A/R	18A05000	A-400084	PIPE CLEANING AGENT ABS/PVC/CPVC
	16	A/R	18A04800	A-400036	PIPE THREAD SEALANT/LOCKER
	15	A/R	18A04700	A-400035	O-RING LUBRICANT, SILICONE
D2	14	1	22A35500	A-400237	CABLE TIE, SMALL - SHORT
D2	13	9.5 IN.	38A08100	A-613006	TUBING, SILICONE, 0.187 ID x 0.312 OD
	12	2	28B13400	B-100388	BARB, LONG, SPRAY HEAD
	11	1	22B24113	B-450610	O-RING, SILICONE, .07" NOMINAL WIDTH, .426 ID
C2	10	1	22B24223	B-450616	O-RING, SILICONE, .103 NOM WIDTH, 1.174 ID
	9	1	22B24312	B-450601	O-RING, SILICONE, .139" NOM WIDTH, .859 ID
	8	1	22A35200	A-100444	WAVE SPRING
	7	1	38A08000	A-400125	DUAL BARB FITTING, MALE ELBOW
	6	1	22A34800	A-400020	GLYDE RING, Q.D. DROGUE
	5	1	22A34900	A-400082	GLYDE RING
	4	1	28B13000	B-100339	NUT, DROGUE, HIGH PRESSURE, SYSTEM 1
	3	1	28C12900	C-100504	DROGUE, HIGH PRESSURE, SYSTEM 1
C1	2	1	28C12800	C-100348	DROGUE, QUICK-DISCONNECT, SYSTEM 1
	1	1	28C12600	N/A	MANIFOLD SPRAY HEAD

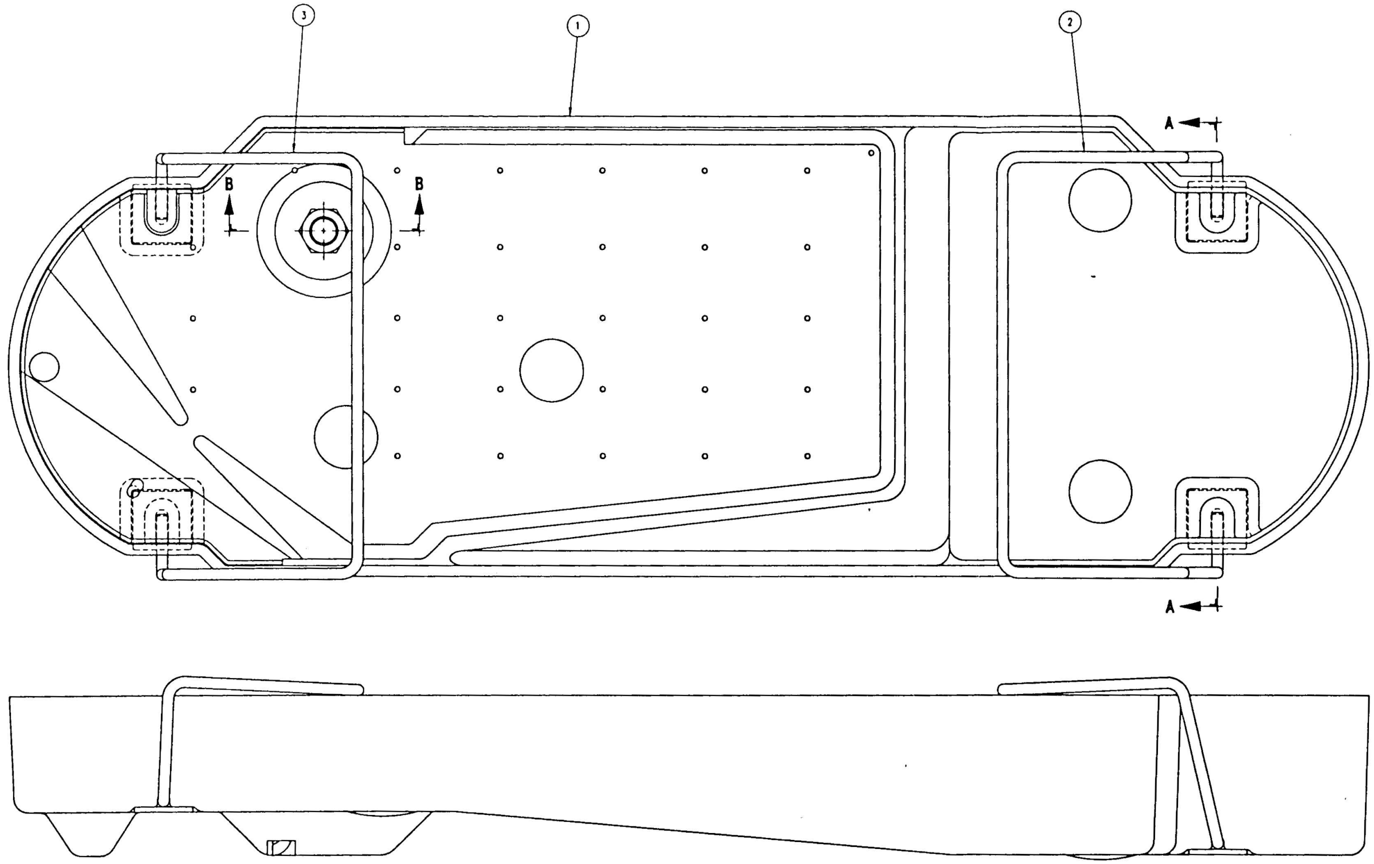
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± 1/64 DECIMALS .XX ± .010 .XXX ± .005 ANGLES ± 0°30'

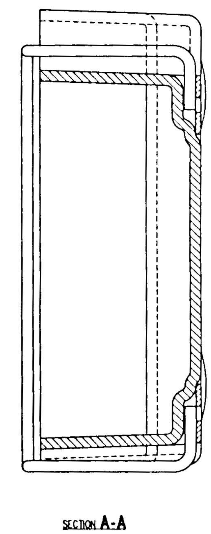
DO NOT SCALE DRAWING

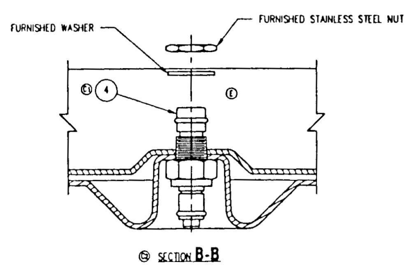
STERIS Corporation Mentor, Ohio

DRAWN BY D.E.M.	DATE 4-12-94	S.A., SPRAY MANIFOLD, RIGID ADAPT. STERIS SYSTEM 1
CHECKED BY MINEROVIC	DATE 5-6-94	
APPROVED BY W.KOCHTE	DATE 5-6-94	MATERIAL SEE BILL OF MATERIAL; FINISH N/A
REVISION J. BEVAN	DATE 7-21-94	SHRINKAGE N/A; COLOR N/A
SIZE C	PROJECT NO. 93E034	PART NO. 31C31900 REV. D
SCALE 1=1		SHEET 1 OF 1

7.25







REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION EO #2745	4-26-94	W. KOCHTE
	B	REMOVED ITEMS 4 AND 5, SEE EO #2752	4-28-94	W. KOCHTE
	C	1 ADDED PART No. 38A08200 (ITEM 4) 2 ADDED SECTION B-B 3 ADDED PART No. 31M32000 (ITEM 5) EO #2764	5-4-94	W. KOCHTE
	D	ADDED STERIS LOGO, E.C.N. NO.2823	6-1-94	W. KOCHTE
	E	REMOVED FURNISHED O-RING FROM SECTION B-B ECN #2961	8-4-94	

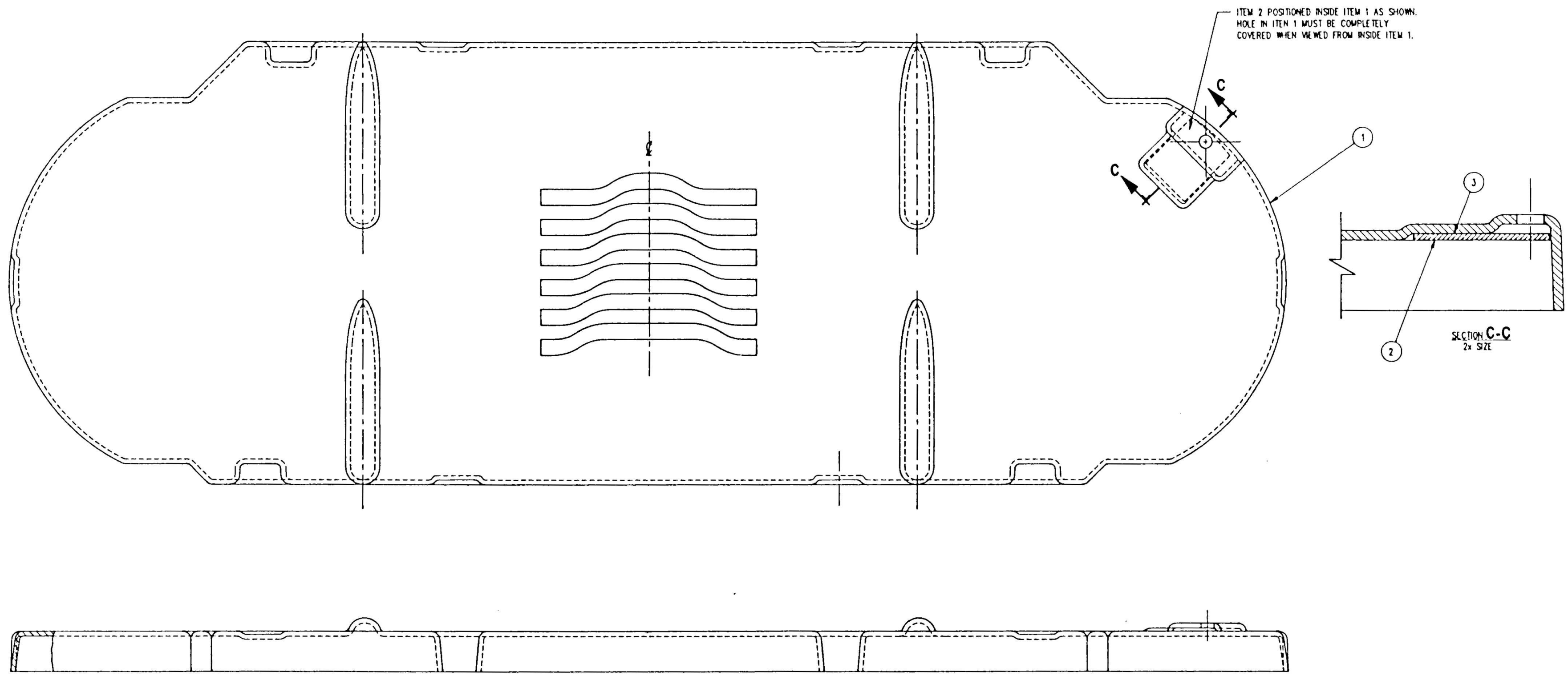
ITEM	QTY.	PART NO.	DESCRIPTION
5	REF	31M32000	METHOD SHEET, DIRECTED FLOW CASSETTE, BOTTOM
4	1	38A08200	HIGH PRESSURE QUICK DISCONNECT
3	1	21B20400	HANDLE, L.H., DIRECTED FLOW CASSETTE, STERIS SYSTEM 1
2	1	21B20300	HANDLE, R.H., DIRECTED FLOW CASSETTE, STERIS SYSTEM 1
1	1	31D29100	S.A., DIRECTED FLOW CASSETTE, BOTTOM

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

STERIS Corporation Mentor, Ohio

DRAWN BY DEM	DATE 4-4-94	S.A., DIRECTED FLOW CASSETTE, BOTTOM, STERIS SYSTEM 1	
CHECKED BY DEM	DATE 5-5-94		
APPROVED BY WWK	DATE 5-5-94	MATERIAL SEE BILL OF MATERIAL	N/A
REVISION JRH	DATE 8-4-94	N/A	COLOR N/A
SIZE D	PROJECT NO. 93E034	PART NO 31D32000	REV. E
DO NOT SCALE DRAWING	SCALE 1=1		SHEET 1 OF 1

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION E.O. NO. 2744	4-26-94	
	B	ADDED STERIS LOGO, ADDED STERIS PART NO'S. TO B/M, E.C.N. NO. 2734	6-1-94	



ITEM	QTY	MICRODIMENSION PART NO.	STERIS PART NO.	DESCRIPTION
3	A/R	18A05800	A-400054	REZ-N-BOND, ABS & STYRENE
2	1	28A08800	N/A	PLATE, VENT, STERIS SYSTEM 1
1	1	28D08400	N/A	DIRECTED FLOW CASSETE, TOP, STERIS SYSTEM 1

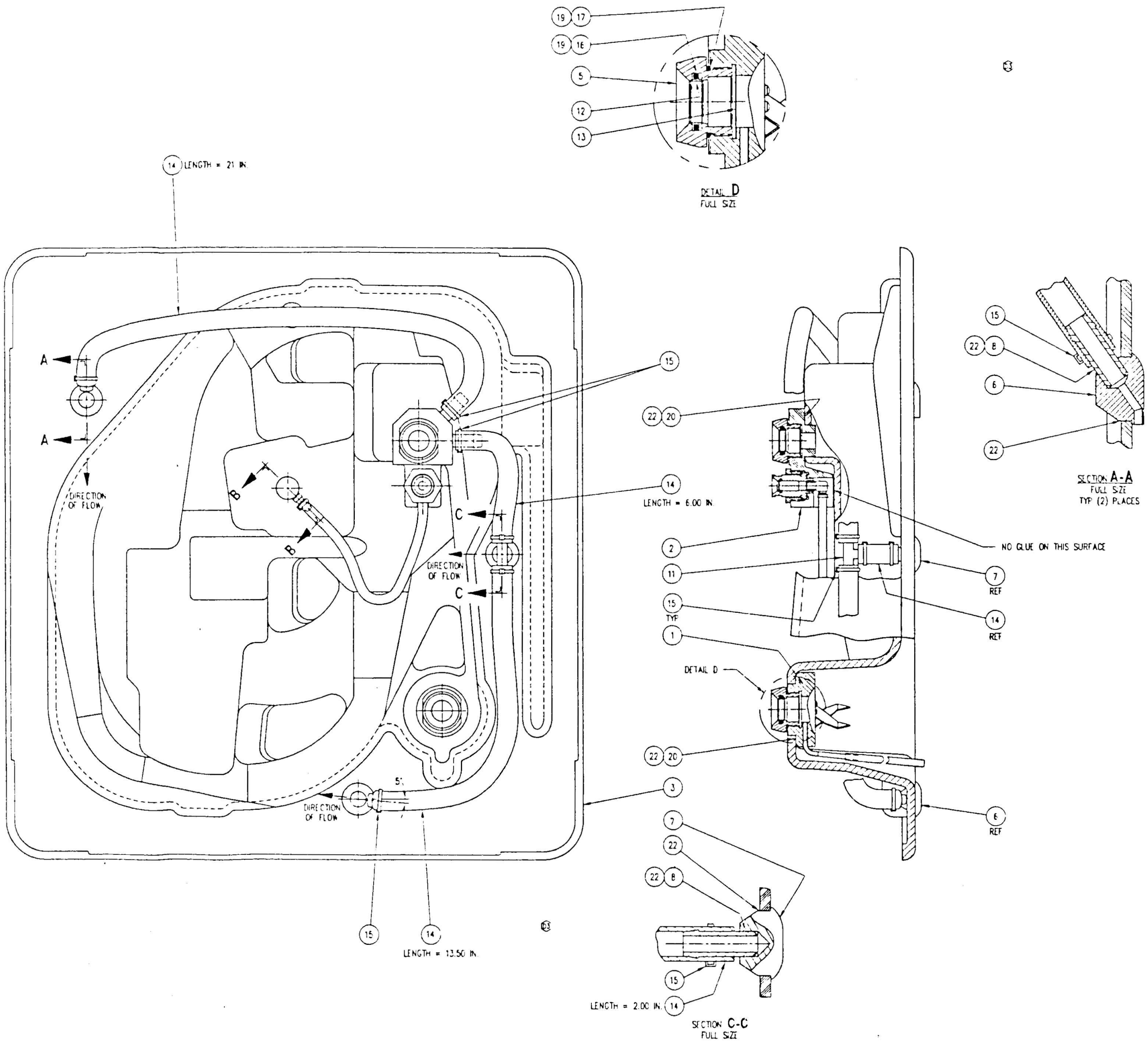
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± 1/64 .XX ± .010 ± .XXX ± .005

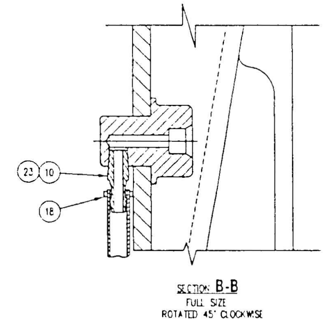
STERIS Corporation Mentor, Ohio

DRAWN BY D.E.M. 4-4-94	S. A., DIRECTED FLOW CASSETTE, TOP STERIS SYSTEM 1	
CHECKED BY D.E.M. 4-26-94		
APPROVED BY KOCHTE 4-26-94	MATERIAL SEE BILL OF MATERIAL	FINISH N/A
REVISION D.E.M. 6-1-94	N/A	COLOR N/A
SIZE D / PROJECT NO. 30315	PART NO. 31D32100	REV. B
DO NOT SCALE DRAWING / SCALE 1=1		SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION ECN #3245	1-6-95	RCS
	B	CHANGED QTY OF ITEM 14 FROM 48" - REMOVED DWG SIZE FROM P/NS AND UPDATED FROM DUAL NUMBERS - ADDED ABS POCKET CUP DETAIL ECO # 3005	1-29-96	JR
	C	ADDED ITEM 26 P/N 400707 TO BOM ECO# 3220	5-3-96	JF
	D	(1)REMOVED ITEM 25 P/N 400492, P 17/P 24-7676 ABS POCKET CUP,(2) REMOVED ITEM 26 P/N 400707, VERSILOK 506 W/ACCELERATOR,(3)REMOVED DETAIL "E" ECO/3283	5/24/96	[signature]

NOTE: FOR ASSEMBLY INSTRUCTIONS SEE METHOD SHEET 31M33000





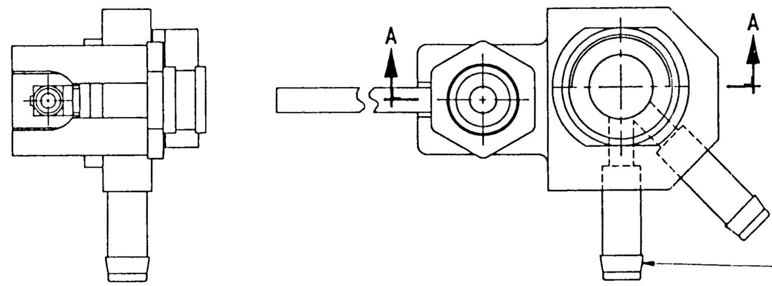
ITEM	QTY	PART NO.	DESCRIPTION
24	REF	31M33000	METHOD SHEET, COV FLEX TRAY S.A
23	A/R	400036	PIPE THREAD SEALANT/LOCKER
22	A/R	400086	MULTI-PURPOSE CEMENT, PVC-CPVC-ABS-STYRENE
21			
20	A/R	400084	PIPE CLEANING AGENT ABS/PVC/CPVC
19	A/R	400035	O-RING LUBRICANT, SILICONE
18	1	400237	CABLE TIE, SMALL-SHORT
17	1	450616	O-RING, SILICONE, .103 NOM WIDTH, 1.174 ID
16	1	450601	O-RING, SILICONE, .139" NOM WIDTH, .859 ID
15	8	400001	CABLE TIE (3.9")
14	42.5"	613000	REINFORCED SILICONE TUBING 3/8" I.D., 3/4" O.D
13	1	100168	SCREEN, FILTER
12	1	400062	GLYDE RING
11	1	38A09300	BARB FTG., TEE, 3/8 I.D
10	1	38A03400	BARB FTG., STRAIGHT 3/16 I.D. X 1/16 NPT MALE
9			
8	3	100388	BARB, LONG SPRAY HEAD
7	1	100346	HEAD, SPRAY-MODIFIED STERIS SYSTEM 1
6	2	100254	HEAD, SPRAY STERIS SYSTEM 1
5	1	100348	DROGUE, QUICK-DISCONNECT, SYSTEM 1
4			
3	1	31D33500	S.A., FLEX CASSETTE TRAY W/Q.D BLOCK SYS 1
2	1	31C33200	S. A., SPRAY MANIFOLD FLEX INST SYS 1
1	1	200108	S. A., CUP CUTTER BASE, SYSTEM 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE FRACTIONS DECIMALS ANGLES ± 1/64 .XX ± .010 ± .XXX ± .005

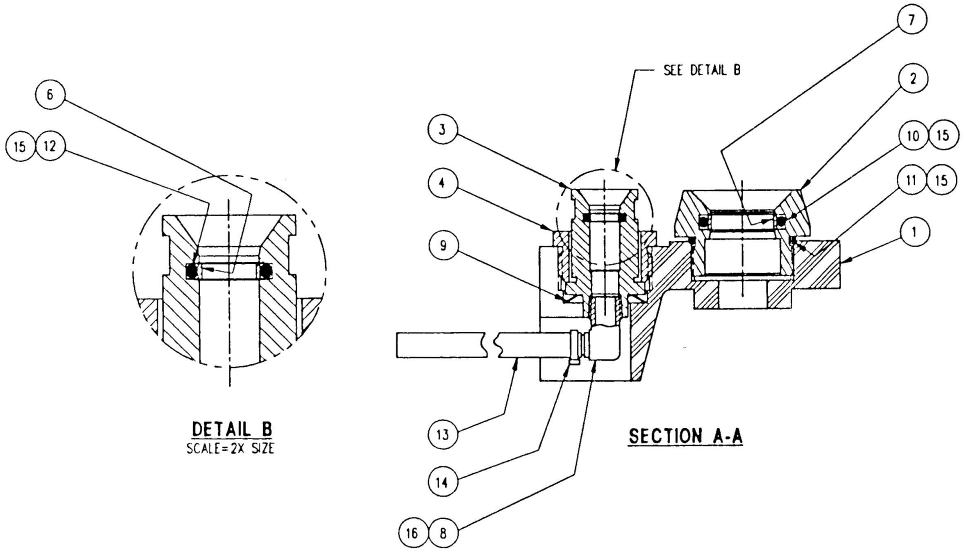
STERIS Corporation Mentor, Ohio

DRAWN BY DEM	DATE 6-19-94	S.A., FLEX INST. CASSETTE TRAY SYS 1	
CHECKED BY RCS	DATE 1-6-95		
APPROVED BY RCS	DATE 1-6-95	MATERIAL SEE BILL OF MATERIAL	FINISH
REVISED SKE	DATE 5-17-96		COLOR
SIZE D	PROJECT NO 95018	PART NO 31D33000	REV D
DO NOT SCALE DRAWING	SCALE 1=2		SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION ECN 13245	1-6-95	RLJ



NOTE: FOR ASSEMBLY INSTRUCTIONS SEE METHOD SHEET 31M33200



ITEM	QTY	MICRODIMENSION PART NO.	STERIS PART NO.	DESCRIPTION
20	REF	31M33200	N/A	METHOD SHEET, COV FLEX SPRAY MAN S.A.
19	A/R	18A05600	A-400086	MULTI-PURPOSE CEMENT, PVC-CPVC-ABS-STYRENE
18	A/R	18A05500	A-400085	PRIMER, PVC, CPVC
17	A/R	18A05000	A-400084	PIPE CLEANING AGENT ABS/PVC/CPVC
16	A/R	18A04800	A-400036	PIPE THREAD SEALANT/LOCKER
15	A/R	18A04700	A-400035	O-RING LUBRICANT, SILICONE
14	1	22A35500	A-400237	CABLE TIE, SMALL-SHORT
13	12 IN	38A08100	A-613006	TUBING, SILICONE, 0.187 ID x 0.312 OD
12	1	22B24113	B-450610	O-RING, SILICONE, .07" NOM WIDTH, .426 ID
11	1	22B24223	B-450616	O-RING, SILICONE, .103" NOM WIDTH, 1.174 ID
10	1	22B24312	B-450601	O-RING, SILICONE, .139" NOM WIDTH, .859 ID
9	1	22A35200	A-100444	WAVE SPRING
8	1	38A08000	A-400125	DUAL BARB FITTING, MALE ELBOW
7	1	22A34800	A-400020	GLYDE RING, Q.D. DROGUE
6	1	22A34900	A-400082	GLYDE RING
5	2	28B13400	B-100388	BARB, LONG, SPRAY HEAD
4	1	28B13000	B-100339	NUT, DROGUE, HIGH PRESSURE, SYSTEM 1
3	1	28C12900	C-100504	DROGUE, HIGH PRESSURE, SYSTEM 1
2	1	28C12800	C-100348	DROGUE, QUICK-DISCONNECT, SYSTEM 1
1	1	28C13100	N/A	MANIFOLD, SPRAY HEAD STERIS SYSTEM 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± 1/64 .XX ± .010 ± 0°30'
.XXX ± .005

STERIS Corporation Mentor, Ohio

DRAWN BY: D.E.M.	DATE: 6-19-94
CHECKED BY: RLJ	DATE: 1-6-95
APPROVED BY: RLJ	DATE: 1-6-95
REVISION	DATE

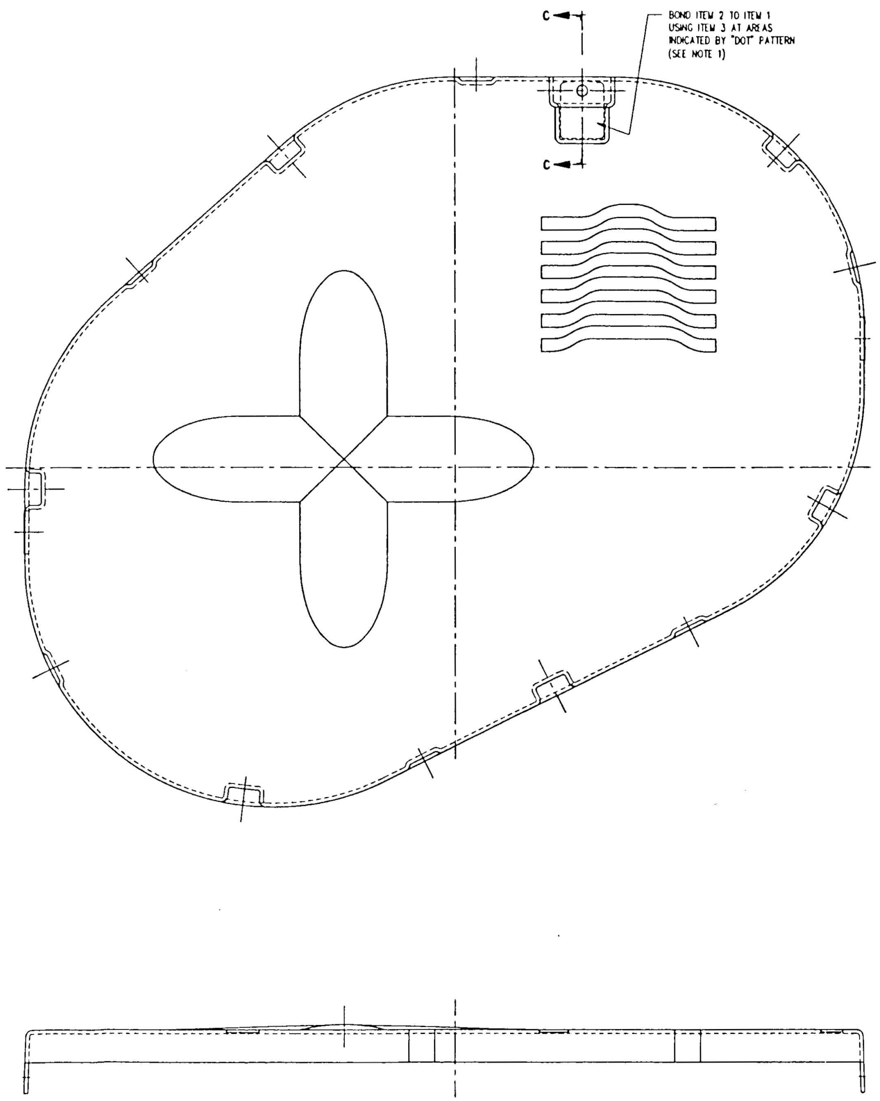
S. A., SPRAY MANIFOLD FLEX INST SYS 1

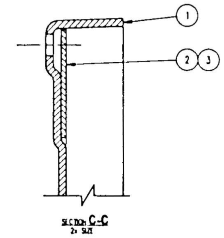
MATERIAL: SEE BILL OF MATERIAL
FINISH: N/A
SHRINKAGE: N/A
COLOR: N/A

SIZE: C
PROJECT NO. 93E035
PART NO. 31C33200
REV. A

DO NOT SCALE DRAWING
SCALE 1=1
SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION ECN 13245	1-4-95	





NOTES:

1. ALL OUTER SURFACES ADJACENT TO GLUE JOINTS TO BE FREE OF ADHESIVE RESIDUE.
2. PARTS ARE TO BE INDIVIDUALLY WRAPPED IN PROTECTIVE FOAM SHEET BEFORE SHIPPING.
3. PARTS MUST NOT BE LAID FLAT OR STACKED IN SHIPPING CONTAINER.

ITEM	QTY	MICRODIMENSION PART NO	STERIS PART NO	DESCRIPTION
3	A/R	18A05800	A-400054	REZ-N-BOND, ABS & STYRENE
2	1	28A06800	N/A	PLATE, VENT, STERIS SYSTEM 1
1	1	28E09600	N/A	TOP CASSETTE, FLEX-INST., STERIS SYS 1

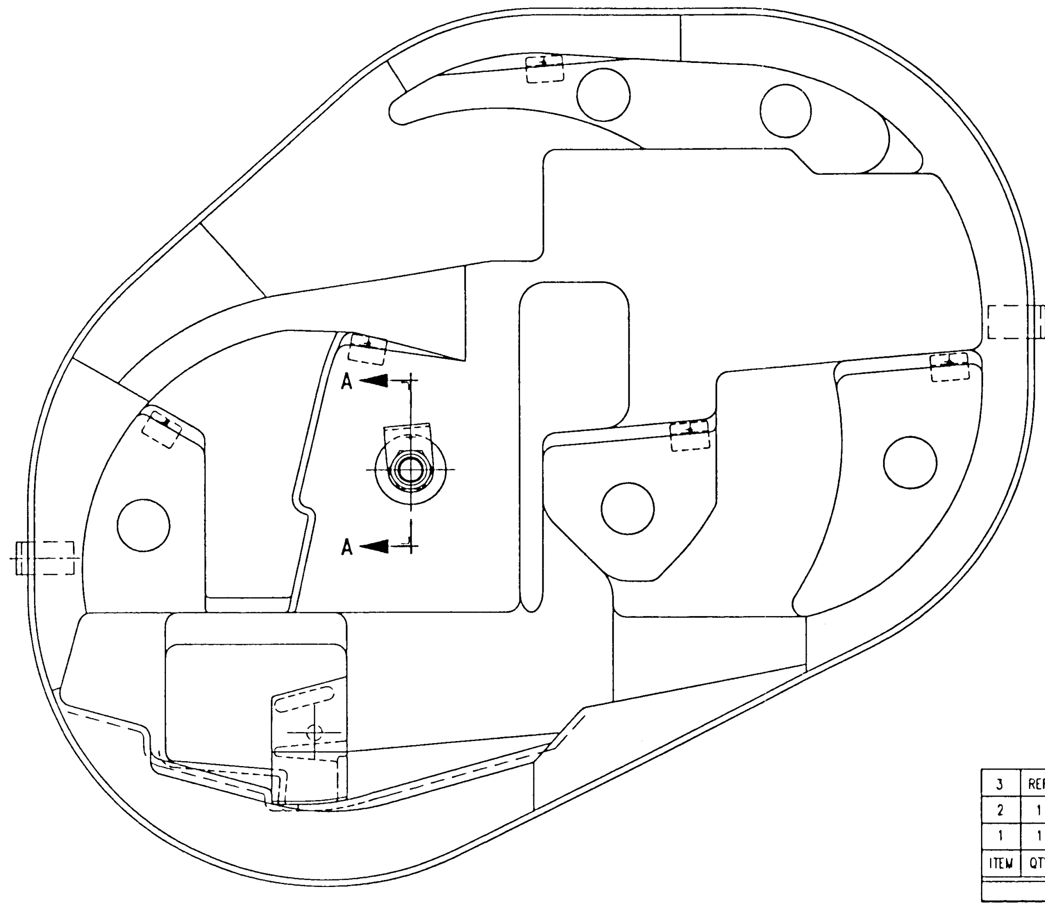
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± 1/64 .XX ± .010 ±
.XXX ± .005

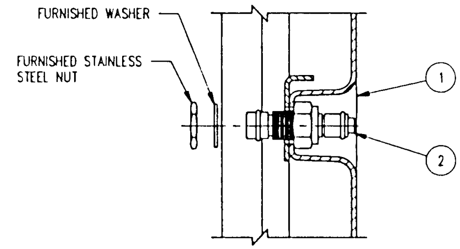
STERIS Corporation Mentor, Ohio

DRAWN BY: DEM DATE: 5-24-94	S.A., TOP CASSETTE FLEX-INST SYS 1
CHECKED BY: DATE: 1-4-95	
APPROVED BY: DATE: 1-4-95	MATERIAL: SEE BILL OF MATERIAL
SIZE: D	PROJECT NO: 93Y035
PART NO: 31D32700	REV: A
DO NOT SCALE DRAWING	SCALE 3/4
SHEET 1 OF 1	

7.30

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE FOR PRODUCTION ECN #3245	1-6-95	RCL





SECTION A-A

NOTE: FOR ASSEMBLY INSTRUCTIONS SEE METHOD SHEET 31M32800

ITEM	QTY	MICRODIMENSION PART NO.	STERIS PART NO.	DESCRIPTION
3	REF	31M32800	N/A	METHOD SHEET, COV FLEX CONT S.A.
2	1	38A08200	N/A	HIGH PRESSURE QUICK-DISCONNECT
1	1	31D32600	N/A	S. A., BOTTOM CASSETTE, FLEX-INST. SYS 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± 1/64 .XX ± .010 ± 0°30'
.XXX ± .005

STERIS Corporation Mentor, Ohio

DRAWN BY: DEM	DATE: 5-24-94
CHECKED BY: RCL	DATE: 1-6-95
APPROVED BY: RCL	DATE: 1-6-95
REVISION	DATE

TITLE: S.A., BOTTOM CASS. FLEX. INST., W / Q.D. SYS 1

MATERIAL: SEE BILL OF MATERIAL

FINISH:

SHRINKAGE:

COLOR:

SIZE	PROJECT NO.	PART NO.	REV.
C	93E035	31C32800	A

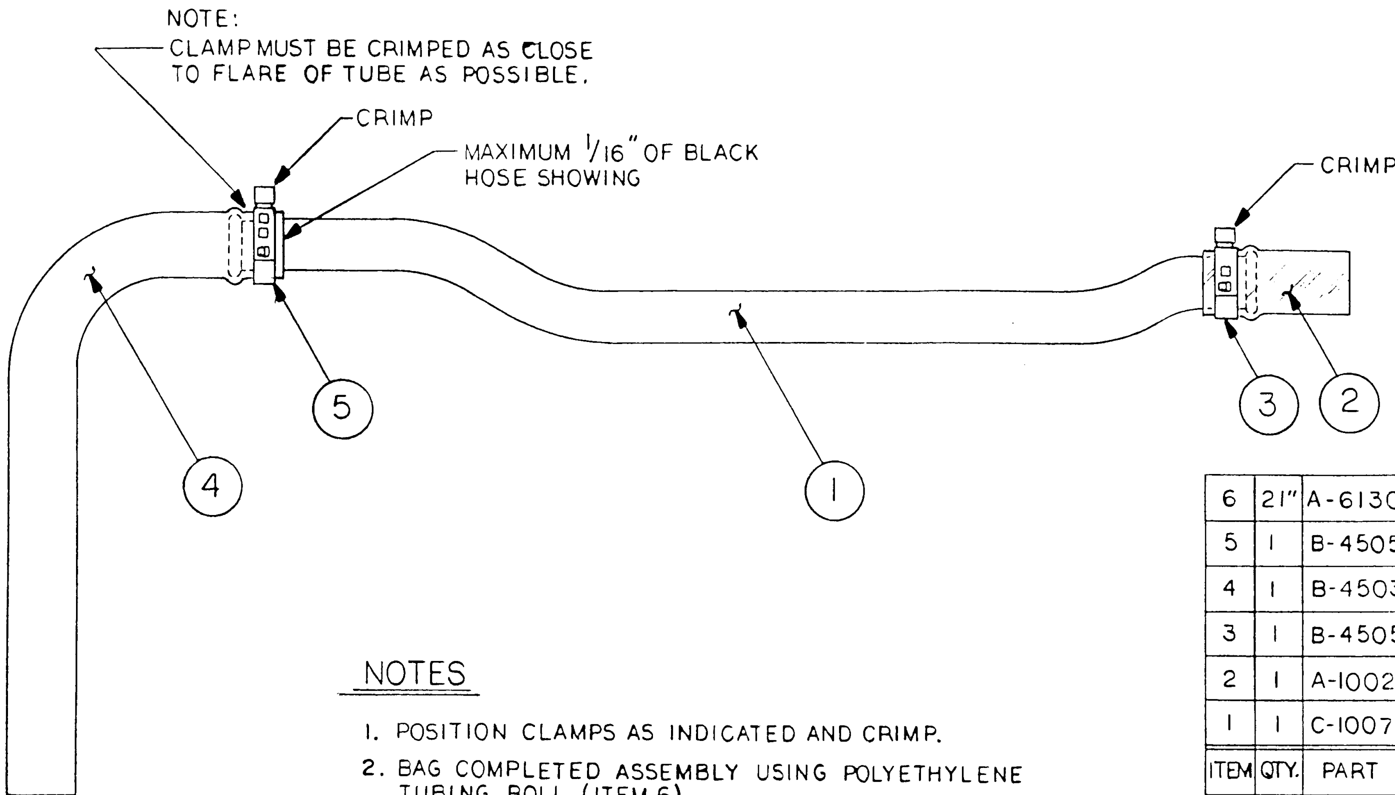
DO NOT SCALE DRAWING

SCALE 1=2

SHEET 1 OF 1

7.31

DATE	SYM	REVISION RECORD	DR.	CK.
4/23/93	A	RELEASE NO. 698	RAS	



NOTES

1. POSITION CLAMPS AS INDICATED AND CRIMP.
2. BAG COMPLETED ASSEMBLY USING POLYETHYLENE TUBING ROLL (ITEM 6).
3. DURING INSTALLATION SLIGHT ROTATION OF TUBING MAY BE REQUIRED.

ITEM	QTY.	PART NO.	DESCRIPTION
6	21"	A-613017	POLYETHYLENE TUBING ROLL
5	1	B-450504	CLAMP, 3/4 DIA.
4	1	B-450302	VENT TUBE
3	1	B-450511	CLAMP, 5/8 DIA.
2	1	A-100228	TUBE COUPLING
1	1	C-100739	DRAIN TUBE

STERIS
CORPORATION

MATERIAL: LISTED

TOLERANCES UNLESS OTHERWISE SPECIFIED: .XX ± — .XXX ± — X° ±

REQ'D. —

SCALE —

FINISH —

TITLE: DRAIN TUBE ASSEMBLY

DRAWN R. Schueman DATE 4/23/93

CHECKED T. Sheldorf 4/28/93

APPROVED T. Sheldorf 4/28/93

DRAWING NO. B-200311

527807

REPLACEMENT PART

ROUTINE MAINTENANCE

INDEX

FAx : 0882977870

8.1 ROUTINE MAINTENANCE

DAILY:

1. Operator maintenance as described in Operator's Manual and/or Technical Bulletin #T1ØØ2, ROUTINE MAINTENANCE.
2. Inspect screen in adapter tray(s) for debris. Remove debris if present.
3. Remove and clean adaptor tray.

EVERY SIX (6) MONTHS: (OR IF DAMAGED)

1. Replace sterile air filter.

EVERY SIX (6) MONTHS: (OR PER FACILITY'S REQUIREMENTS)

1. Visually inspect power cord and plug.
2. Check power plug for proper contact in receptacle.

EVERY SIX (6) MONTHS: (OR DURING SERVICE)

1. Check printer paper holder and paper feed function for proper operation.
2. Test inflatable seal and air system for air leakage.
3. Check max air compressor output.
4. Check Kepner valve.
5. Check entire Processor for fluid leakage.
6. Check high press pump output.
7. Remove any dust buildup in electronics enclosure and on cooling fan.
8. Check Pot adjustments.

EVERY 1,ØØØ CYCLES:

1. Replace Pinch Valve Sleeves.
2. Replace Float Block Check Valves. *

EVERY 5,ØØØ CYCLES OR EVERY 5 YEARS

1. Replace dual inlet valve.
2. Perform detailed inspection of all hoses, hose connections and electrical connectors.

STANDARD PROCEDURES

INDEX

TITLE: FIELD LID REPLACEMENT PROCEDURE

NUMBER: FSP-ØØ1

DEPT/SERIES: FIELD SERVICE/ALL MODELS

EFFECTIVE DATE: Ø2/21/92

NO. OF PAGES: 3

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. P/N 45Ø1ØØ Roll Pins (A/R, up to 3)
2. Loctite Thread Lock (A/R)
3. 5/32 Cobalt Drill Bit
4. Lid Spacer Kit (P/N 2ØØ273)
   Includes: (4) Spacers (P/N 1ØØ7Ø7)
   (4) Shims (P/N 1ØØ7Ø6)

PROCEDURE:

1. Disconnect line cord from outlet, disconnect water lines (inlet & drain).

2. Flip unit over and remove the four (4) feet and two (2) screws that hold the shroud on.

3. Remove shroud and flip unit back over.

4. Disconnect the #6 clamp that holds the black hose to the float block.

5. Pull the black hose off the float block and let it hang.

6. Remove the retaining ring on bottom of gas cylinder and remove the 8-32 set screw in lid that locks the clevis pin.

7. Using a 8-32 screw, screw into the threaded hole of the clevis pin. With the lid open and held with the right hand, pull the clevis pin out by the screw head (8-32) with the left hand.

8. Remove the gas cylinder and close lid.

E. Open lid and close it slowly until latch hook touches the top of the latch pawls. The latch hook should touch the latch pawl on its sloped edge. If not, use the set screw on the latch bar to adjust the latch bar's travel.

15. Once lid is adjusted and all screws are tightened, install the gas cylinder from bracket on frame to lid and insert the clevis pin into gas cylinder. Adjust lid opening speed with clevis pin.

16. Install retaining ring on bottom of gas cylinder, tighten set screw into lid to lock clevis pin in place.

17. Install black hose on float block assembly and tighten hose clamp.

18. Close lid and make sure the latch flag is still in adjustment.

19. Flip unit over and install shroud.

2Ø. Once shroud is installed, flip unit over and install water lines (drain and inlet), plug unit back into power source. Run test cycles and check for leaks.

TITLE:	FIELD LID SWITCH & LATCH FLAG ADJUSTMENT PROCEDURE
NUMBER:	FSP-ØØ2
DEPT/SERIES:	FIELD SERVICE/ALL MODELS
EFFECTIVE DATE:	Ø2/21/92
NO. OF PAGES:	3

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. Volt meter (VOM) w/micro clip lends
2. (1) .Ø2Ø" shim
3. (1) .Ø6Ø" shim

PROCEDURE:

Once it has been determined that the lid switch is out of adjustment, perform the following steps:

1. Remove power cord from wall receptacle.

2. Turn off water supply to Processor, depress red button to relieve pressure at pre-filter housing.

3. Disconnect inlet water hose from the back side of Processor and install cap.

4. Disconnect inlet water hose from the back side of Processor and install cap.

5. Remove adapter tray from inside cavity of Processor and set aside.

6. Siphon water from both QD posts and install caps on all (3) posts.

7. Turn unit upside down (making sure always to turn unit with P.C. card cage up), then remove the four (4) feet, and two (2) screws on back side securing lower shroud to frame and set aside.

8. Remove shroud from Processor and set aside.

9. Turn Processor upright and plug power cord into wall receptacle.

1Ø. Remove lid from card cage and set aside.

11. Connect VOM to Pin 1Ø (Gnd) and Pin 6 on CN9 Connector. (Open will read 5V).

12. Visually examine that the connector is connected to limit switch.

13. Visually examine latch flag assembly for damage. Latch flag should be approximately parallel to the latching hook. (See Figure 1)

    NOTE: Top view looking down through slot left side.

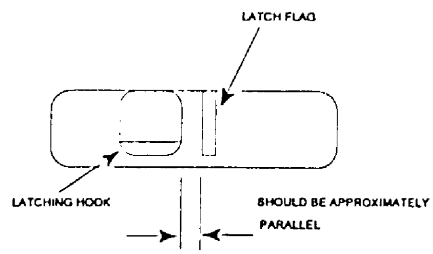


FIGURE 1

14. With lid assembly closed connect the VOM to Pin 1Ø and Pin 6 on CN9 connector.

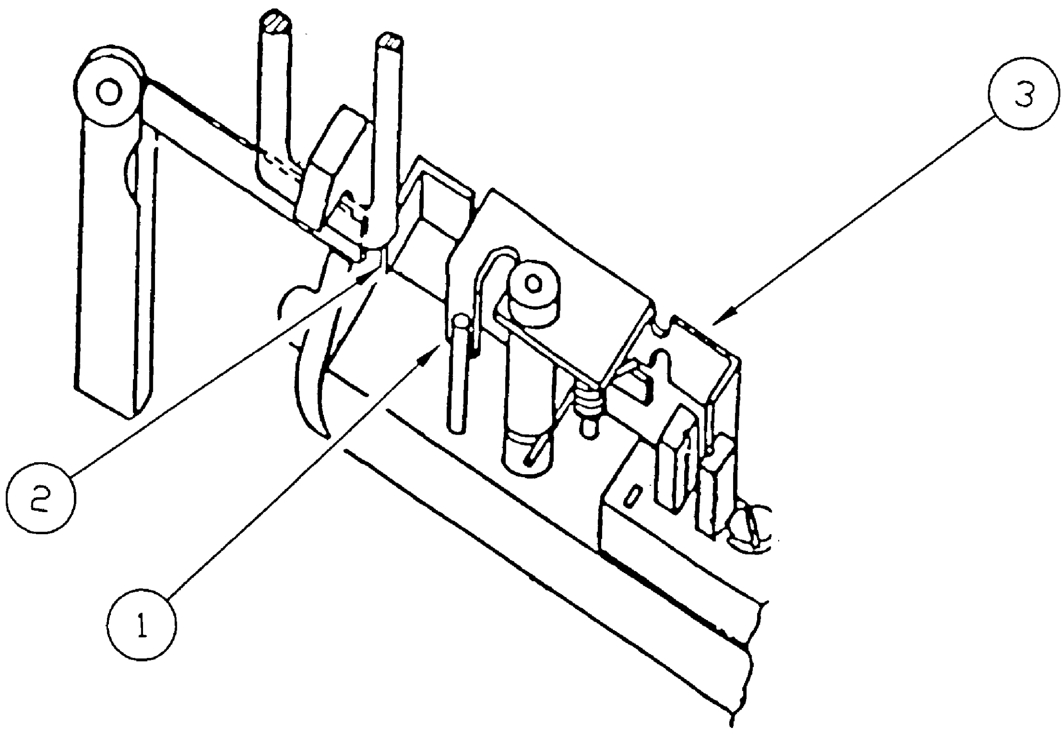
15. Insert .Ø2Ø" thick shim between latch wire and latch hook. Voltage reading should be zero.

16. Without removing .Ø2Ø" thick shim, insert an additional .Ø6Ø" (total .Ø8Ø") thick shim. Voltage reading should read 5 volts.

    NOTE: If STEP 15 & 16 are not met, re-adjustment of the latch flag must be made. (See Figure 2).

17. Bend leg (1) until flag edge (2) will touch .Ø2Ø" shim installed and leg (1) will touch pin.

18. Insert .Ø6Ø" shim (Total .Ø8Ø") between latch wire, latch hook and flag edge (2). Voltage should read 5 volts. If not, bend leg (3) away from sensor, flag edge (2) is touching shims, and leg (1) is touching pin.



19. Remove shims from assembly.

2Ø. Remove VOM from CN9 connector.

NOTE: Be sure when turning unit that card cage is always up to prevent water entering card cage.

21. Turn unit upside down, install shroud with four feet and two screws securing shroud to frame.

22. Turn unit right side-up, position with respect to inlet water and drain hose.

23. Remove caps previously installed, and re-connect inlet water hose, the blue inlet valve, and the drain hose to the brass male fitting on opposite side.

24. Re-install lid on electronics card cage.

25. Plug unit into wall receptacle and run test cycles.

TITLE: FIELD PROCEDURE FOR MEASURING PROCESSOR CHAMBER PRESSURE

NUMBER: FSP-ØØ3

DEPT/SERIES: Field Service/ALL MODELS

EFFECTIVE DATE: Ø2/21/92

NO. OF PAGES: 3

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. 35 oz/sq in gauge with fittings for 3/16 tubing
2. 3/16 to 1/8 tubing adaptor
3. length of 3/16 tubing (approx 3 ft)
4. length of 1/8 tubing (approx 1 ft)
5. tubing pinch clamp
6. QD fitting
7. RS-232 Terminal

PROCEDURE:

1. Open the Processor lid and lift the adaptor tray.

   A. RIGID TRAY: Disconnect the 1/8 or 3/16 tube from the high pressure spray head, near the sterilant chamber. Clamp the loose line from the high pressure drogue, using a tubing pinch clamp.

   B. FLEXIBLE TRAY: Disconnect the 1/8 or 3/16 tube from the left QD (quick disconnect) port. Clamp the loose line from the high pressure drogue, using a tubing pinch clamp. On the top side of the tray, insert a male QD fitting into the left QD port. This will open the port to chamber pressure.

2. Using tweezers, pull the 3 ft length of 3/16 tubing through the channel under the inflatable seal retainer. (The left side is more convenient). Be careful not to puncture or tear the 3/16 tubing. Connect the tubing to the high pressure spray head fitting under the tray, in place of the disconnected tube.

If the spray head fitting used 1/8 tubing (older trays), use the short length of 1/8 tubing and stepdown adaptor to complete the connection.

Lower the tray into place. Make sure the 3/16 line isn't pinched by blowing into it. Then connect the pressure gauge to the 3/16 tube outside the Processor and close the lid.

3. Turn the inlet water valve OFF so that no water can enter the Processor.

4. Using the hand terminal, type: CTRL-C
   Fill the seal: XBY(4ØØ2H)=3Ø enter
   Start the water flow: XBY(4ØØ1H)=241 enter

5. Slightly open the inlet water valve. The water should fill the chamber slowly. After the chamber has filled and water pressure begins to increase, adjust the inlet water valve so the rate of pressure rise is about 1 oz. every 2 to 5 seconds. This slow rate of fill is important to get an accurate reading and to avoid spilling an excessive amount of water.

6. While the chamber is slowly filling, type in the following command <u>but do not hit "enter"</u>.

   XBY(4ØØ1H)=119
   DO NOT HIT "ENTER"

   This command will start the drain as soon as "enter" is pushed. This allows you to quickly stop the fill as soon as the leak pressure is attained.

7. When water starts to spill out the lower left corner of the Processor, record the gauge reading.

   Also, hit "enter" to start the drain. Do this as soon as possible to limit the amount of spillage.

8. To interpret the results, consider the following:

1.2 psi	19.2 oz/in2	too low
1.6	25.6	low end of normal
1.8	28.8	normal
2.Ø	32.Ø	a really good seal
2.2	35.2	highest possible

9. To reset the Processor:

stop	XBY(4ØØ1H)=255 enter
turn off the compressor	XBY(4ØØ2H)= 28 enter
deflate the seal	XBY(4ØØ1H)=254 enter
reset	XBY(4ØØ1H)=255 enter

1Ø. Open the Processor and put everything back the way it was:

A. Remove the gauge tubing and the tubing clamp.

B. Put the tube to the high pressure spray head back on its fitting.

C. Secure the high pressure tube to the fitting with a ty-wrap.

11. Run a sterile processing cycle or DIAGNOSTIC and check to make sure there is no leakage from the tray to the drip pan.

TITLE: FIELD TROUBLESHOOTING ADAPTER TRAY LEAKS

NUMBER: FSP-ØØ4

DEPT/SERIES: FIELD SERVICE/ALL MODELS

EFFECTIVE DATE: Ø2/21/92

NO. OF PAGES: 2

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

o None

PROCEDURE:

1. Determine if leak is actually from adapter tray.

   A. Check header block for leaks

      1. Place a dry paper towel between drip pan and lid directly under header block.
      2. Run sterile cycle.
      3. Remove towel before releasing seal. Towel should be dry.
      4. If not dry, locate leak in header block area and repair.

   B. Check anti-siphon check valve for leaks.

      1. Check for moisture in tubing from check valve to drip pan.

      2. If moisture is present, remove tubing from drip pan.

      NOTE: Moisture in tubing does not always mean check valve is leaking. It may just be condensation from a full drip pan.

      3. If check valve leaks, place end of tubing into small container to catch water.
      4. Run sterile cycle (complete cycle with four (4) rinses).
      5. Check for water leaking from tubing.
      6. If there is a leak, then replace anti-siphon check valve.

C. Check for leaks around lid seal.

1. Dry off edges of adapter tray and drip pin.
2. Close lid.
3. Slip paper towels between lid and drip pan until they touch inflatable seal. Do this all the way around lid.
4. Run complete sterile processing cycle.
5. Remove towels and check for moisture. Do this before releasing lid seal.

D. Verify adapter tray leak.

1. Remove water from drip pan and dry with towel.
2. Run complete sterile processing cycle.
3. If water is present in drip pan, remove water from drip pan and dry with towel.
4. Install different adapter tray.
5. Run a complete sterile processing cycle and check drip pan.

2. Locating Leaks in Adapter Tray.

A. All types of adapter tray leaks.

1. Check for loose hoses.
2. Check for loose drogue fittings.
3. Check for adapter tray binding when installing or removing.
4. Check QD post.

B. Check for leaks caused by bad glue joints or cracks.

1. Visually inspect bottom of tray for cracks in casting and cup cutter base. On the Olympus video tray, pay special attention to the area around the cup cutter base.

2. To locate bad glue joints or cracks that are not visible.

   a. Run sterile cycle.
   b. When Processor is draining, cover air inlet hole on air filter.
   c. Watch for air bubbles entering chamber. This will indicate source of leak.
   d. Once leak source has been found, uncover air inlet hole and allow Processor to drain.

C. Check H.P. Tubing on rigid adapter tray. The tubing may have a small tear at the 9Ø° tubing connector on H.P. drogue.

TITLE: P. C. BOARD HANDLING/SHIPPING PROCEDURE

NUMBER: FSP-ØØ5

DEPT/SERIES: FIELD SERVICE

EFFECTIVE DATE: Ø2/21/91

NO. OF PAGES: 1

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. P/N 61ØØ35 Box 8 1/2" x 11" x 2" (use with 3ØØØ76 or 300086 Brds.).
2. P/N 61ØØ37 Foam Pad [(2) foam pads required for 61ØØ35 box].
3. P/N 61ØØ36 Box 16" x 6" x 4" (use with 3ØØØØ3 or 300077 Brds.).
4. P/N 61ØØ38 Foam Pad [(2) foam pads required for 61ØØ36 box].

PROCEDURE:

The following procedure must be followed by all Field Service personnel when installing, removing, and shipping (returns) of P.C. Boards.

1. Wrist straps must be put on, ground wire snapped in place, and clip grounded prior to handling of any PCBd.

2. PCBds must come out of, and be put back into anti- static protective bags.

3. Shipping back to STERIS:

   A. PCBd is to be carefully replaced in an anti-static bag - one (1) Board/bag.
   B. Bagged PCBd is to be placed in individual cardboard box of proper size.
   C. When possible, wrap bagged PCBd with a minimum of one (1) layer of foam, or bubble wrap, prior to placing in cardboard box.
   D. DO NOT SHIP LOOSE PCBds in same shipping container with other large parts. Only wrapped and individually boxed PCBds can be included/consolidated in a larger box with other parts.

TITLE: SEALANT	GENERAL PROCEDURE FOR APPLYING THREAD AND ASSEMBLING PARTS WITH NPT THREADS
NUMBER:	FSP-ØØ6
DEPT/SERIES:	FIELD SERVICE/89A1
EFFECTIVE DATE:	Ø2/21/92
NO. OF PAGES:	1

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

P/N 4ØØØ36, Teflon Thread Sealant

PROCEDURE:

1. Threads must be cleaned and free of any contamination.
2. When applying thread sealant (4ØØØ36) to the threads, leave the first two (2) threads clear of any sealant.
3. When applying thread sealant (4ØØØ36) make sure an even amount is put between the pitch and root of threads.
4. Turn piece until hand tight.
5. After hand tight, tighten with wrench one full turn (36Ø°).
6. If the connection leaks, tighten 1/4 turn more.
7. If the connection leaks, tighten 1/4 turn more.
8. If the connection leaks, reject the parts.

This procedure should be used whenever a pressure transducer is replaced. This will avoid over-tightening and cracking the sterile filter housing!

TITLE: ASPIRATOR ASSEMBLY LEAK TEST PROCEDURE

NUMBER: 6ØØØ47

DEPT/SERIES: FIELD SERVICE, FINAL TEST/89A1

EFFECTIVE DATE: Ø9/13/9Ø

NO. OF PAGES: 1

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. Container with approximately 6" of water
2. Length of 1/8" tubing (Approximately 12")
3. 5Øcc syringe

PROCEDURE:

1. Remove aspirator to be tested from tubing on adapter tray.

2. Install 1/8" tubing onto the aspirator's 9Ø° elbow and attach other end of tubing to syringe (See Figure 1).

3. Plug orifice on end of aspirator probe with finger.

4. Submerge top of aspirator in water (See Figure 1).

5. Using syringe, force air into aspirator and check for leaks, air bubbles. If leaks occur, aspirator should be replaced.

TITLE: SANDING PROCEDURE FOR STICKING UPPER SEAL (P/N 1ØØØ31)

NUMBER: 6ØØØ5Ø

DEPT/SERIES: FIELD SERVICE, FINAL TEST/89A1

EFFECTIVE DATE: 1Ø/16/92

NO.OF PAGES 1

GENERAL

If upper seal sticks to the adapter tray after completion of a STERIS SYSTEM 1tm operation cycle (DIAGNOSTIC or regular), implement this procedure.

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

Medium grit or similar grade sandpaper.

PROCEDURE:

If upper seal is sticking to adapter tray, sand top face at rear spice area lightly to roughen finish.

If sticking persists, lightly sand entire face surface.

During retest, check for water leaks between upper seal and adapter tray.

If after sanding entire face surface sticking persists, troubleshoot unit for possible other problem. This may include the replacement of the sticking upper seal.

TITLE:	THERMOCOUPLE SHORT TEST
NUMBER:	6ØØØ66
DEPT/SERIES:	FIELD SERVICE, FINAL TEST/89A1
EFFECTIVE DATE:	Ø2/Ø6/92
NO. OF PAGES:	2

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. Fluke Digital Multimeter, Model 85 or equivalent.
2. Test clip leads (2) approximately 12" long.

PURPOSE

The purpose of this document is to establish a standard test method for detection of shorted wires in a thermocouple (P/N 1ØØ52Ø) used in a STERIS SYSTEM 1™ Processor.

SCOPE

This standard operating procedure describes the procedure and mechanisms used to test and detect shorted wires in a thermocouple (P/N 1ØØ52Ø) prior to installation and after installation in a SYSTEM 1 Processor.

PROCEDURE

Test steps prior to installation of thermocouple.

1. Attach one end of a test clip lead to both thermocouple leads. Attach the other end to one lead of the digital multimeter.

2. Using the second clip lead, attach one end to the other lead from the digital multimeter and one end to the steel probe of the thermocouple area behind the hexhead.

3. Set digital multimeter to read ohms. A reading of "O.L." (overload) signifies that there is not a short in the thermocouple. If the multimeter gives a numerical value, this signifies a short in the thermocouple and should be rejected.

Test steps after installation of the thermocouple.

1. Attach one end of a test slip lead to the white thermocouple lead. Attach the other end to the one lead of the digital multimeter.

2. Using the second lip lead, attach one end to the other lead from the digital multimeter and one end to the steel probe of the thermocouple area behind the hexhead.

3. Set digital multimeter to read ohms. A reading of "O.L." (overload) signifies that there is not a short in the thermocouple. If the multimeter gives a numerical value, this signifies a short in the thermocouple and should be rejected.

TITLE: COMPRESSOR OUTPUT MEASUREMENT TEST

NUMBER: 600067

DEPT/SERIES: FIELD SERVICE, FINAL TEST/89A1

EFFECTIVE DATE: 02/06/92

NO. OF PAGES: 2

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. RS 232 Terminal
2. Omega HHP5100 (0-100 psi) pressure gauge or equivalent

PURPOSE

The purpose of this document is to establish a standard test method for the air compressor in a STERIS SYSTEM 1tm Processor.

SCOPE

This standard operating procedure describes the procedure and mechanisms used to test an air compressor for a minimum output of 44 psi while operating in the STERIS SYSTEM 1 Processor.

NOTE: This procedure only applies to STERIS SYSTEM 1 Processors model 89A1.

PROCEDURE

Test Steps:

1. Using a 9/16 wrench, remove plug fitting from bulkhead connector.
2. Connect hose from pressure gauge to bulkhead connectors. Turn nut until hand tight. Using the 9/16 wrench, turn nut 1/4 of a turn.

   CAUTION: Do not turn nut more than 1/4 of a turn. This could result in damage to bulkhead connector.

3. Ensure SYSTEM 1 Processor is on. Connect RS-232 terminal to Processor.

4. Close SYSTEM 1 pinch valves by command [TYPE: XBY(4001H)=243<CR>].

5. Start air compressor by command [TYPE: XBY(4002H)=31<CR>].

6. Allow compressor to run for five (5) minutes with air pressure gauge connected.

7. At the end of the five (5) minute period, view pressure reading on the air pressure gauge and record data.

   NOTE: If pressure reading is less than 44 psi, discontinue the procedure and begin troubleshooting to determine cause.

8. Stop air compressor by command [TYPE: XBY(4002H)=28<CR>]. Depressurize air system by command [TYPE: XBY(4001H)=254<CR>]. Wait 10 seconds, then by command [TYPE: XBY(4001H)=255<CR>].

9. Remove air pressure gauge hose from the bulkhead connector. Connect fitting to the bulkhead connector. Turn plug until hand tight. Using the 9/16 wrench, turn nut 1/4 of a turn.

CAUTION: **Do not turn nut more than 1/4 of a turn.This could result in damage to bulkhead connector.**

STERIS CORPORATION
TEST PROCEDURE

Number 6ØØØ73

TITLE: Transducer Potentiometer Calibration Procedure 4 Layer Board

K. Scheckelhoff — Written By — 3-2-92 Date

MODEL #/SERIES 89A1, 9ØA1, 9ØA2

PRODUCT NAME: SYSTEM 1 Processor

K. Scheckelhoff — Approved By — 9-16-92 Date

PART/ASSEMBLY NUMBER(S): See below

DATE	REV.	REVISION RECORD	DR.	APPROVED
6-19-92	A	Release No. 6Ø1	JB	KS
7-3Ø-92	B	ERO No. 1311	RAS	KS 1Ø-8-92
1Ø-7-92	C	ERO No. 1333	DEM	KS 1Ø-13-92
2-11-93	D	ERO No. 1398	RAS	KS 02-19-93
7-13-93	E	ERO No. 1468	KES	KS 07-15-93

TRANSDUCER POTENTIOMETER CALIBRATION PROCEDURE
4-LAYER BOARD

To be used on SYSTEM 1 models 90A1, 90A2 and 89A1 models.

Procedure #600073
Date: 2/7/92

Board P/N 300076 for Model 89A1
Board P/N 300086 for Models 90A1 and 90A2

NOTE: Do not adjust potentiometer #R8 or R19. They are permanently set at the factory.

1. With the Processor powered up and connected to water and drain, remove the SFH cap and the filter. Empty any water from the SF chamber. Then measure the voltage between CN-9 Pin 9 and Ground U11-14. The voltage should be between 0.900-1.100 V. If voltage is outside this range the transducer or transducer connection is defective.

2. Confirm that a sterile filter is in place; then re-install the SFH cap. Load and run the program for the calibration. The program name is "**CAL076.BAS**" (see Appendix A).

3. When initiated the software will cause the chamber to fill utomatically. Then the screen will print "stabilizing for 120 seconds". After 120 seconds the screen will begin displaying the transducer counts.

4. Monitor the computer screen while potentiometer R29 is beingadjusted. Adjust so that the number being printed reads between 1.60 and 2.00 counts with a target level of 1.75 counts. Counterclockwise rotation increases the readings.

5. To drain the unit type "**<CTRLC>**". Then type **10 ←ENT**". Run the program again (by typing "**RUN ←ENT**". The screen will print "Drain Complete" and release the lid seal when the chamber is empty.

6. To return unit to its normal state type: "**ROM ←ENT, RUN ←ENT**"

CAL076.BAS

```
0
1 REM CALIBRATION OF PRESSURE XDUCR. A/D CHANNEL
10 GOTO 200
20 XBY(4001H) = 119
30 TIME = 0
40 PRINT : PRINT: PRINT "DRAINING CHAMBER" : PRINT
50 DO : WHILE TIME <= 40
60 XBY(4002H) = 28 : XBY(4001H) = 254
70 TIME = 0
80 DO : WHILE TIME < 5
90 XBY(4001H) = 255
100 PRINT "DRAIN COMPLETE" : PRINT
110 PRINT USING(##)
120 STOP
200 PRINT USING(###)
210 L = XBY(4000H)
220 IF L.AND.1 THEN PRINT "LID OPEN --- PLEASE CLOSE" :PRINT
230 DO : L = XBY(4000H) : UNTIL ( (L .AND. 1) = 0 )
240 PRINT "FILLING CHAMBER" : PRINT
250 XBY(4002H) = 30 : XBY(4001H) = 249
260 DO : L = XBY(4000H) : UNTIL L .AND. 2
270 XBY(4001H) = 251
280 PRINT "STABILIZING FOR 120 SECONDS" : PRINT
290 T = 0
300 LAST = 0
310 TIME = 0
320 DO
330 ET = TIME - T
340 IF ((ET - LAST) >= 1) THEN PRINT ET,CR, : LAST = LAST + 1
350 WHILE TIME <= T + 120
360 PRINT TIME,CR,
370 PRINT USING(###.##)
380 PRINT : PRINT
390 PRINT "NOW DISPLAYING TRANSDUCER READINGS" : PRINT
400 B = 0
410 FOR I = 1 TO 100
420 A = XBY(0E005H)
430 B = B + A
440 NEXT I
450 PRINT B/100,CR,
460 GOTO 400
```

APPENDIX B

TITLE: FIELD PROCEDURE
TRANSDUCER POTENTIOMETER CALIBRATION PROCEDURE
FOR 4 LAYER BOARD P/N 3ØØØ76 (89A1) AND 3ØØØ86
(9ØA1 AND 9ØA2)

FOR USE WITH RS-232 TERMINAL

EQUIPMENT, FIXTURES, SPECIAL TOOLS:

1. RS-232 terminal

This procedure may be done with the Processor hot or cold.

PROCEDURE:

1. Enter the following commands, with ←ENT at the end of each line:

```
XBY(4ØØ2H)=3Ø
RAM
1Ø XBY(4ØØ1H)=249
2Ø DO:A=XBY(4ØØØH):UNTIL A.AND.2
3Ø XBY(4ØØ1H)=251:END
RUN
```

make sure of space

f4 = 30
RAM
10 f3= 249
20 sp DO: A = XBY (4000H) :UNTIL A AND 2
30 f3=251:END
RUN

The compressor starts and the machine fills with water and stops.

2. Wait a minimum of two (2) minutes while typing in the following commands, with ←ENT at the end of each line:

```
NEW
PRINT USING(#.##)
1Ø B=Ø
2Ø FOR I=1TO1ØØ
3Ø A=XBY(ØEØØ5H)
4Ø B=B+A
5Ø NEXT I
6Ø PRINT B/1ØØ,CR,
7Ø GOTO 1Ø
RUN
```

counts R29

3. The display outputs the average of the last 1ØØ readings. Adjust potentiometer #R29 until the readings consistently fall between 1.6Ø and 2.ØØ counts, with a target level of 1.75 counts.

---

4. To drain and reset the unit, and to return control to the Processor, type the following:

<CTRLC>

XBY(4001H)=119	Turns on circ pump, closes the circ pinch valve, and leaves the drain pinch valve open. This drains the processor.
	After the unit has completely drained, then:
XBY(4002H)=28	This turns off the air compressor.
XBY(4001H)=254	This releases the lid seal.
XBY(4001H)=255	Returns the processor to the READY condition.

ROM

RUN

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	RELEASE NUMBER 876	5-24-95	RCS
	B	IMPROVED INSTRUCTIONS ECO # 1833	8/11/95	

INSTRUCTIONS FOR PACKAGING THIS KIT

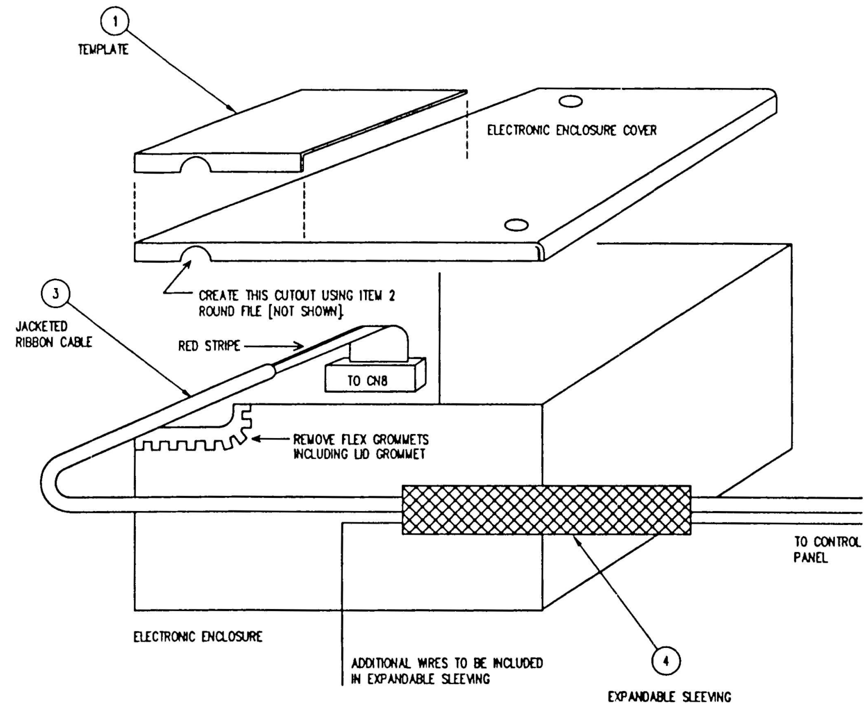
TO PREPARE THIS KIT FOR STOCKING AND ULTIMATELY SHIPMENT TO FIELD SERVICE PERSONEL ITEMS 3, 4, 5 AND 8 MUST BE INCLUDED AND PLACED INSIDE ITEM 6, THE POLYETHLENE TUBING ROLL AND SEALED. FOR IDENTIFICATION PURPOSES APPLY THE LABEL, ITEM 7 AS INDICATED.

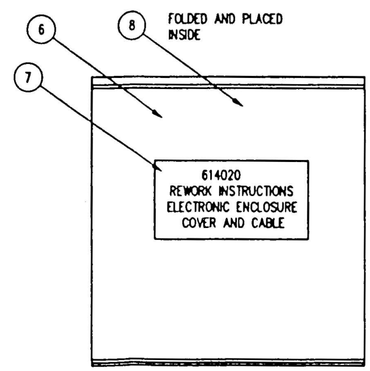
ITEMS 1 AND 2 ARE REQUIRED ITEMS ALTHOUGH THEY SHOULD NOT BE INCLUDED IN EACH KIT. THESE ITEMS SHOULD BE REQUISITIONED SEPARATELY AND RETAINED FOR FUTURE USE.

REWORK INSTRUCTIONS

NOTE: OBSERVE ELECTROSTATIC DISCHARGE PRECAUTIONS WHILE HANDLING P.C. BOARDS.

1. DISCONNECT POWER TO THE PROCESSOR.
2. OPEN CONTROL PANEL AND REMOVE COVER ON THE ELECTRONIC ENCLOSURE.
3. FLEX GROMMETS LOCATED ON THE ELECTRONICS ENCLOSURE AND ENCLOSURE COVER MAY BE REMOVED USING A FLAT BLADE SCREWDRIVER OR OTHER APPROPRIATE TOOL.
4. IN ORDER TO INSTALL THE JACKETED RIBBON CABLE IT IS NECESSARY TO PROVIDE A SEMI-CIRCULAR CUTOUT IN THE COVER.
5. THE LOCATION OF THIS CUTOUT IS PROVIDED BY POSITIONING THE SUPPLIED TEMPLATE [P/N A-601040] AS INDICATED ON THIS DRAWING.
6. THE ACTUAL CUTOUT WILL BE ADDED TO THE COVER IN THE FOLLOWING MANNER
   A. MOVE THE COVER TO A LOCATION WHERE ALUMINUM FILINGS WILL NOT CAUSE CONTAMINATION.
   B. PEEL BACK THE FOAM TAPE LOCATED ON THE UNDERSIDE OF THE COVER TO PREVENT DAMAGE DURING FILING. DO THIS ONLY IN THE VICINITY OF THE WORK TO BE PERFORMED.
   C. POSITION THE TEMPLATE AND SECURE WITH ONE HAND WHILE PREPARING TO FILE THE CUTOUT INTO THE COVER USING THE SUPPLIED 10", 3/8" DIA., SMOOTH CUT ROUND FILE [P/N A-400594].
   D. CREATE THE PRESCRIBED CUTOUT AS INDICATED. REMOVE ALL SHARP EDGES USING FINE SANDPAPER OR EQUIVALENT.
   E. CLEAN ALL FILINGS FROM UNDERSIDE OF COVER AND RESTORE FOAM TAPE TO THE ORIGINAL LOCATION.
7. ACTUAL RIBBON CABLE REPLACEMENT SHOULD BE ACCOMPLISHED IN THE FOLLOWING MANNER
   A. REMOVE THE EXISTING RIBBON CABLE [P/N B-300014] BY CLIPPING ALL NECESSARY CABLE TIES. REMOVING THE P.C. BOARD COVER AND LOOSENING THE DISPLAY/PRINTER P.C. BOARD MOUNTING SCREWS MAY BE NECESSARY. REMOVE THE FIBERGLASS SLEEVING AT THIS TIME.
   B. POSITION THE JACKETED RIBBON CABLE STARTING AT CN8 AND CAREFULLY ROUTE UNDER THE DRIP PAN AND ALONG THE FRAME JUST AS BEFORE. USING THE PROVIDED EXPANDABLE TUBING [P/N A-400610] INCLUDE THE FOUR [4] ADDITIONAL WIRES IN A BUNDLE AND SECURE USING THE EXISTING TIE PADS.
   C. RE-CONNECT ALL WIRES TO THE DISPLAY/PRINTER P.C. BOARD. DOUBLE CHECK ALL CONECTIONS AND ENSURE FREE MOVEMENT OF CONTROL PANEL. TIGHTEN ALL HARDWARE. REPLACE THE ELECTRONIC ENCLOSURE COVER. RESTORE POWER TO PROCESSOR. REWORK IS COMPLETE.





ITEM	QTY.	PART NO.	DESCRIPTION
8	REF.	C-614020	REWORK INSTRUCTIONS
7	1	A-101037	LABEL
6	1 ft.	A-613018	POLYETHYLENE TUBING ROLL
5	6	A-400001	CABLE TIE
4	1	A-400610	EXPANDABLE SLEEVING
3	1	B-300014	CABLE, JACKETED RIBBON
2	REF.	A-400594	FILE, 10", 3/8" DIA. SMOOTH, ROUND
1	REF.	A-601040	TEMPLATE, COVER REWORK

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ±1/64 DECIMALS .XX ±.010 .XXX ±.005 ANGLES ±0°30'

STERIS Corporation Mentor, Ohio

DRAWN BY RAS	DATE 05/19/95	REWORK INSTRUCTIONS ELECTRONIC ENCLOSURE COVER & CABLE
CHECKED BY WJF	DATE 05/25/95	
APPROVED BY RCS	DATE 05/25/95	LISTED
REVISION	DATE 8/11/95	
SIZE C	PROJECT NO. 95018	PART NO. C-614020 REV. B
SCALE 1=1		SHEET 1 OF 1

DO NOT SCALE DRAWING

TABLES/TOOL LIST
INDEX

QUANTITY	DESCRIPTION
1	1/2 x 9/16 Tubing Wrench
1	Open End Ignition Wrench Set 3/16" - 3/8"
1	6" File
1	Set Drill Bits (cobalt) (multiple 3/16")
1	Digital Thermometer
1	Digital Multimeter
1	Digital Pressure Gauge-Compatible With Water
1	Swaglock Tee Assy. For Using Press Gauge In-Line on Processor
1	Tee Assy. for Using Press Gauge In-Line on Water Inlet (w/Dial Pressure Gauge, Ø-1ØØ psi)
1	Pocket Level
1	GFI Tester
1	Anti-Static Wrist Strap
1	Pocket Flashlight
1	Tool Case
1	Parts Case
1	23 Watt Soldering Iron
1	Roll 6Ø/4Ø Solder
1	Drill - 3/8" Variable Speed Reversible
1	Polaroid Camera

GENERAL TOOL LIST

QUANTITY	DESCRIPTION
1	Hex Key Set w/Handle .Ø5Ø - 3/16
1	Ball End Long Arm Hex L-Key Set .Ø5Ø - 5/16
1	5/32" T-Handle Hex Wrench (min 1Ø" long)
1	1/4" Drive Nut Drive Type Handle
1	1/4" Drive 1/4 Socket
1	1/4" Drive 5/16 Socket
1	1/4" Drive 11/32 Socket
1	1Ø" Channel Lock Pliers
1	4" Curved Jaw Vise-Grip
1	Diagonal Cutters
1	Long Nose Pliers
1	6" Hemostats
1	Wire Strippers/Crimpers
1	8" Adjustable Wrench
1	Pocket Knife
1	3/8 or 5/16 x 6 Slotted Screwdriver
1	3/16 x 4 Slotted Screwdriver
1	Stubby Slotted Screwdriver
1	Pocket Slotted Screwdriver
1	#1 x 3" Phillips Screwdriver
1	Offset Screwdriver
1	3/8 x 7/16 Open End Wrench
2	1/2 x 9/16 Open End Wrench
1	5/8 x 11/16 Open End Wrench
1	3/8 x 7/16 Tubing Wrench

SPECIAL TOOLS 9Ø A1/9ØA2

DESCRIPTION	STERIS P/N
RS-232 Hand terminal (TT8Ø45)	5ØØ1Ø2
Cable (for hand terminal)	5ØØ1Ø3
STERIS/RS-232 Adapter (for hand terminal)	5ØØ1Ø4
Power Supply (for hand terminal)	5ØØ1Ø5
Filter Test Plug	1ØØ381
Filter Test Plug Handle	1ØØ382
Filter Test Plug O-Ring	45Ø624
Pressure Gauge kit with Adapters	N/A
Ball Valve / Fitting Assembly	2ØØ314
Clear Sterile Filter Housing Cap (old style)	2ØØ281
Clear Sterile Filter Housing Cap (new style)	2ØØ28Ø
Lid Adjusting Spacer Kit	2ØØ273
Torque wrench (proto #6169A)	------------
Communication link	3ØØØ8Ø
Tool, Drogue Install/Remove (Large)	4ØØ451
Tool, Drogue Install/Remove (Small)	4ØØ452

TEMPERATURE CONVERSION CHART

C	F		C	F		C	F	C	F
1.Ø	33.8		26.Ø	78.8		51.Ø	123.8	76.Ø	168.8
2.Ø	35.6		27.Ø	8Ø.6		52.Ø	125.6	77.Ø	17Ø.6
3.Ø	37.4		28.Ø	82.4		53.Ø	127.4	78.Ø	172.4
4.Ø	39.2		29.Ø	84.2		54.Ø	129.2	79.Ø	174.2
5.Ø	41.Ø		3Ø.Ø	86.Ø		55.Ø	131.Ø	8Ø.Ø	176.Ø
6.Ø	42.8		31.Ø	87.8		56.Ø	132.8	81.Ø	177.8
7.Ø	44.6		32.Ø	89.6		57.Ø	134.6	82.Ø	179.6
8.Ø	46.4		33.Ø	91.4		58.Ø	136.4	83.Ø	181.4
9.Ø	48.2		34.Ø	93.2		59.Ø	138.2	84.Ø	183.2
1Ø.Ø	5Ø.Ø		35.Ø	95.Ø		6Ø.Ø	14Ø.Ø	85.Ø	185.Ø
11.Ø	51.8		36.Ø	96.8		61.Ø	141.8	86.Ø	186.8
12.Ø	53.6		37.Ø	98.6		62.Ø	143.6	87.Ø	188.6
13.Ø	55.4		38.Ø	1ØØ.4		63.Ø	145.4	88.Ø	19Ø.4
14.Ø	57.2		39.Ø	1Ø2.2		64.Ø	147.2	89.Ø	192.2
15.Ø	59.Ø		4Ø.Ø	1Ø4.Ø		65.Ø	149.Ø	9Ø.Ø	194.Ø
16.Ø	6Ø.8		41.Ø	1Ø5.8		66.Ø	15Ø.8	91.Ø	195.8
17.Ø	62.6		42.Ø	1Ø7.6		67.Ø	152.6	92.Ø	197.6
18.Ø	64.4		43.Ø	1Ø9.4		68.Ø	154.4	93.Ø	199.4
19.Ø	66.2		44.Ø	111.2		69.Ø	156.2	94.Ø	2Ø1.2
2Ø.Ø	68.Ø		45.Ø	113.Ø		7Ø.Ø	158.Ø	95.Ø	2Ø3.Ø
21.Ø	69.8		46.Ø	114.8		71.Ø	159.8	96.Ø	2Ø4.8
22.Ø	71.6		47.Ø	116.6		72.Ø	161.6	97.Ø	2Ø6.6
23.Ø	73.4		48.Ø	118.4		73.Ø	163.4	98.Ø	2Ø8.4
24.Ø	75.2		49.Ø	12Ø.2		74.Ø	165.2	99.Ø	21Ø.2
25.Ø	77.Ø		5Ø.Ø	122.Ø		75.Ø	167.Ø	1ØØ.Ø	212.Ø

C= ((F+4Ø)5/9)-4Ø
F= ((C+4Ø)9/5)-4Ø

BIO-MED SUGGESTED PARTS STOCK 9ØA1/9ØA2

PART NO	DESCRIPTION	SUGGESTED QTY
A16ØØ	Aspirator	1
2ØØ253	Seal	1
2ØØØ49	Circulation Pump	1
2ØØØ56	Gas Spring Cylinder	1
2ØØ118	Sterile Filter Housing Cap	1
2ØØ25Ø	Air/Water Valve	1
2ØØ141	Pressure Transducer	1
2ØØ242	H.P. Pump	1
3ØØØ86	Circuit Board	1
4ØØ219	Antisiphon Check Valve	1
4ØØ39Ø	S.S. Check Valve Air Manifold	1
4ØØØ63	Pinch Valve Sleeve	1
4ØØ391	S.S. Check Valve 6 psi	1
4ØØ345	S.S. Check Valve Float Block (CK1)	1
4ØØ51Ø	S.S. Check Valve Float Block (CK2 & 3)	2
45Ø621	O-ring for above	2
4ØØ356	Pre-filter Housing Bowl Assembly	1
4ØØ357	Pre-filter Release Button	1
4ØØ368	S.S. Kepner Valve	1
45Ø622	O-ring for Housing Bowl	1
5ØØ1Ø6	S.S. Heater Element	1
1ØØ681	Heater Element Gasket	1

BIOMEDICAL SUGGESTED PARTS STOCK
90A1/90A2 - (Amended)

PART NO.	DESCRIPTION	SUGG. QTY.
A1600	Aspirator	1
200213	Seal	1
200049	Circulation Pump (90A2)	1
200183	Circulation Pump (90A1)	1
200056	Gas Spring Cylinder	1
200118	SF Housing Cap (Small)	1
200250	Air/Water Valve	1
200164	Pressure Transducer	1
200226	SS Kepner Retrofit Kit	1
200156	HP Pump (90A1)	1
200176	HP Pump (90A2)	1
300086	Circuit Board	1
400219	Antisiphon Check Valve	1
400390	SS Check Valve Air Manifold	1
400063	Pinch Valve Sleeve	1
400391	SS Check Valve 6 psi	1
400345	SS Check Valve Float Block	1
450621	O-Ring for above	2
400356	Pre-filter Housing Bowl Assembly	1
400357	Pre-filter Release Button	1
400368	SS Kepner Valve	1
450622	O-Ring for Housing Bowl	1
500106	SS Heater Element (90A2)	1
500107	SS Heater Element (90A1)	1
100681	Heater Element Gasket	1
200314	Ball Valve	1
400451	Large Drogue Tool	1
400452	Small Drogue Tool	1
300080	Communication Link	1

BIOMEDICAL SUGGESTED PARTS STOCK

90A1/90A2 - (Amended)

PART NO.	DESCRIPTION	SUGG. QTY.
A1600	Aspirator	1
200213	Seal	1
200049	Circulation Pump (90A2)	1
200183	Circulation Pump (90A1)	1
200056	Gas Spring Cylinder	1
200118	SF Housing Cap (Small)	1
200250	Air/Water Valve	1
200164	Pressure Transducer	1
200226	SS Kepner Retrofit Kit	1
200156	HP Pump (90A1)	1
200176	HP Pump (90A2)	1
300086	Circuit Board	1
400219	Antisiphon Check Valve	1
400390	SS Check Valve Air Manifold	1
400063	Pinch Valve Sleeve	1
400391	SS Check Valve 6 psi	1
400345	SS Check Valve Float Block	1
450621	O-Ring for above	2
400356	Pre-filter Housing Bowl Assembly	1
400357	Pre-filter Release Button	1
400368	SS Kepner Valve	1
450622	O-Ring for Housing Bowl	1
500106	SS Heater Element (90A2)	1
500107	SS Heater Element (90A1)	1
100681	Heater Element Gasket	1
200314	Ball Valve	1
400451	Large Drogue Tool	1
400452	Small Drogue Tool	1
300080	Communication Link	1

TECHNICAL INFORMATION NOTICES (TINS)

INDEX

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: July 22, 1993

SUBJECT: ANTI-SIPHON VALVE TEE

NUMBER: TIN001

MODELS COVERED: 89A1 (as required)
90A1 (as required)
90A2 (<S/N 201005)

The black anti-siphon valve tee (p/n 400218) on Model 90A2 Processors has a high probability to develop cracks and leak. Because of this, the black anti-siphon tee has been discontinued and replaced by a white nylon tee (p/n 400426).

During an installation or service visit all Model 90A2 Processors in the S/N range covered should have the black anti-siphon tee (p/n 400218) replaced with a white nylon tee (p/n 400426). On all other Processors, the tee should be checked for cracks and/or leakage during each service visit and replaced if necessary. Refer to the instructions and Figure 1 below to replace the anti-siphon valve tee:

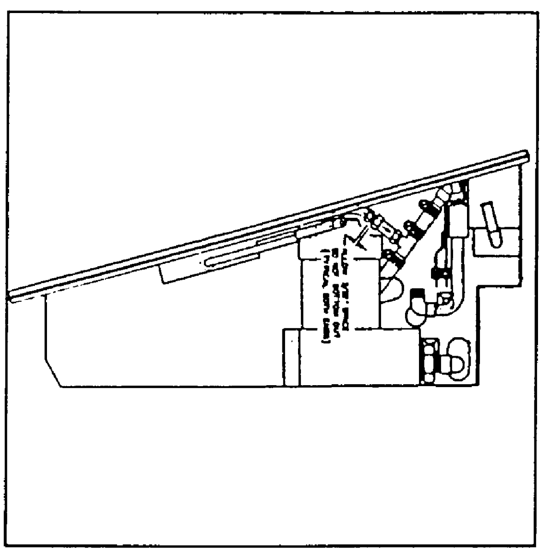


Figure 1

INSTRUCTIONS

1. Loosen the hose clamps on each side of the tee. Slide hose clamps away from the tee.
2. Pull both green hoses off the tee.
3. Hold anti-siphon check valve body and unscrew tee.
4. Apply 2-3 wraps of teflon tape (p/n 400150) to the threads on the nylon tee (p/n 400426).
5. Install and tighten nylon tee on check valve body. DO NOT BOTTOM OUT THREADS.
6. Slip both green hoses over the barbed ends of the tee and position anti-siphon valve assembly.
7. Install and tighten both hose clamps.
8. Run verification cycles and check for leaks.

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: October 8, 1993

SUBJECT: ADAPTER TRAY HOSES

NUMBER: TIN002

MODELS COVERED: 89A1
90A1
90A2
90B1

In order to reduce the possibility of leaks from green hoses on the bottom of the adapter trays, it is recommended that all adapter trays in the field be modified per this TIN. All new trays shipped on or after October 1, 1993 will have this modification.

During an installation or service visit, all adapter trays should be located and modified per this TIN. The modification requires that the ends of every green hose on the bottom of the tray be secured to the barbed fitting with a tie wrap (p/n 400001). Refer to the instructions and **Figures 1** and **2** below to modify the trays:

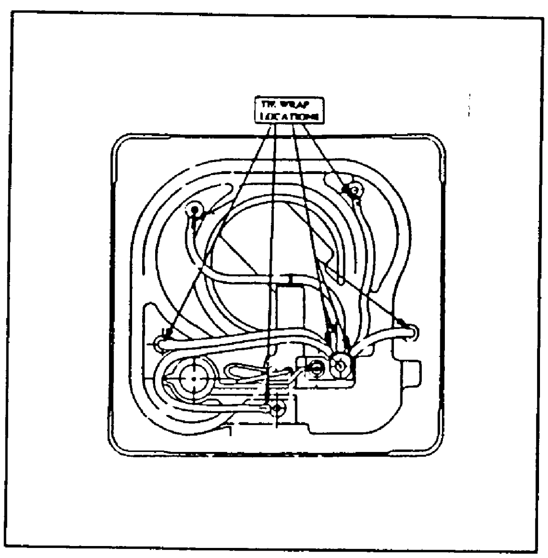


Figure 1

INSTRUCTIONS

1. Remove adapter tray from processor and turn tray upside down, so that the green hoses are visble.

2. Place a tie wrap (p/n 400001) around each green hose approximately 1/8" to 1/4" from the end of the hose. Refer to **Figure 1** for placement on the Flexible Tray (5 - hoses, 10 - tie wraps) and **Figure 2** for placement on the General Tray (2 - hoses, 4 - tie wraps), on page 2. INSURE TIE WRAP IS AROUND HOSE BARB.

3. Use pliers to tighten tie wrap so that hose is compressed and securely attached to the hose barb. CAUTION: DO NOT OVER TIGHTEN, OR DAMAGE, TO THE GLUE JOINTS COULD RESULT.

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: October 8, 1993

SUBJECT: ADAPTER TRAY HOSES

NUMBER: TIN002

MODELS COVERED: 89A1
90A1
90A2
90B1

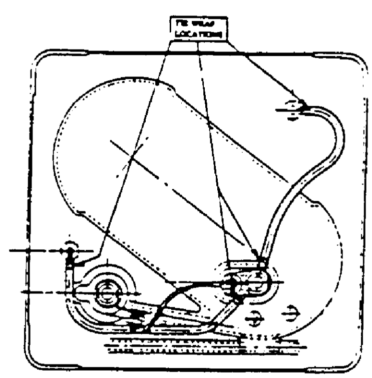


Figure 2

INSTRUCTIONS

4. Cut excess tie wrap at the locking tab.

5. Place adapter tray in Processor.

6. Run a minimum of (1) complete sterile cycle on each tray and check drip pan for excessive fluid.

7. Directed Flow Trays are already tie wraped.

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: December 14, 1995

SUBJECT: OPTICAL SWITCH P/N 500009

NUMBER: TIN003

MODELS COVERED: 89A1 (as required)
90B1 (as required)
90A1 (as required)
90A2 (as required)

The Optical Switch (p/n 500009) on Model 90A1 and 90A2 Processors has been revised. The previous optical switch was discontinued by the manufacturer. An alternative switch is now being used, which the connections (Ground, Output voltage, and Supply voltage) reversed. STERIS began installing these new optical switches on models' 90A2 (s.n. 205157) and models' 90A1 (s.n. 10336).

Originally, the previous optical switch could be connected to the chassis wire connector directly. Now an adapter must be installed to reverse polarity on the optical switch. Initially the Harness Adapter (p/n 33B23100) was used to reverse the polarity on the switch. This was a temporary solution. The current adapter, the PC Board Adapter (p/n 300113) is being installed on all new SYSTEM 1 Processors. All SYSTEM 1 Processors that need new optical switches should have the PC Board Adapter installed. Refer to the instructions when replacing an optical switch on any SYSTEM 1 Processor.

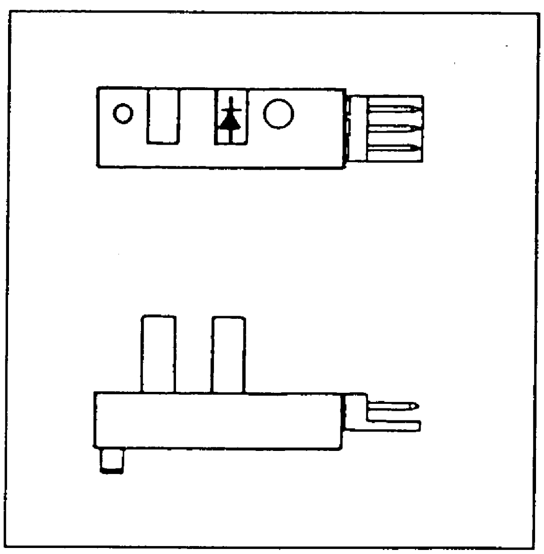


Figure 1

INSTRUCTIONS

1. The Optical Switch (p/n 500009) is shown in **Figure 1**. There are various models of the previous style optical switches with connections aligned. There is no effective way to identify these previous switches. However, the current, reversed polarity, optical switches can be identified with a marking. ALL NEW OPTICAL SWITCHES, THAT NEED A PC BOARD ADAPTER, WILL HAVE THE WORD **"SHARP"** MARKED ON THEM.

2. When installing an optical switch verify markings on the switch. If the switch that is being installed is marked with **"SHARP"**, then proceed to **step 3.**

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: December 14, 1995

SUBJECT: OPTICAL SWITCH P/N 500009

NUMBER: TIN003

MODELS COVERED: 89A1 (as required)
90B1 (as required)
90A1 (as required)
90A2 (as required)

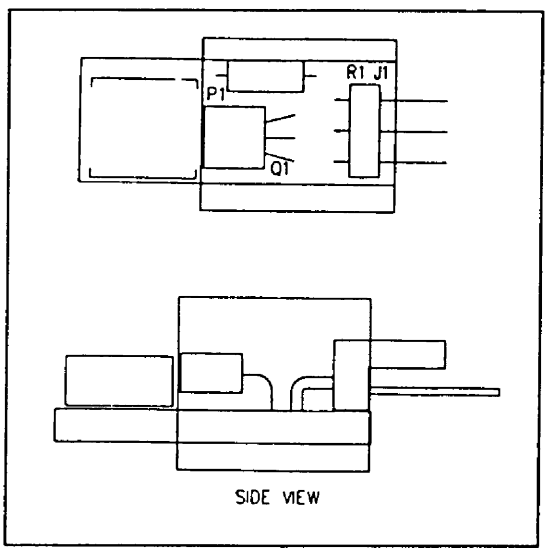


Figure 2

INSTRUCTIONS - continued

3. Install the Optical switch.

4. Attach the PC Board Adapter to the switch. The adapter is "keyed", meaning it can only be installed in the correct orientation on the switch. The PC Board Adapter (p/n 300113) is shown in **Figure 2**.

5. Attach the wire connector to the PC Board Adapter. The wire connector can be identified by having wires (#26, #30 & #34) attached to it. NOTE: THE WIRE CONNECTOR IS NOT KEYED. The wire connector is marked with an arrow on one side. The wire connector must be connected with the arrow up (with the processor right side up). Additionally, wire #26 should face the front of the Processor.

6. The Lid Limit Switch Test (SERVICE MANUAL, Chapter 5) and Field Lid Switch & Latch Flag Adjustment Procedure (SERVICE MANUAL, Chapter 9) should be completed after installation of the switch.

7. WARNING: OPTICAL SWITCH CAN BE SHORTED IF REVERSED POLARITY IS APPLIED TO THE SWITCH.

TECHNICAL INFORMATION NOTICE

TO: Distribution
FROM: STERIS Field Service Department
DATE: December 14, 1995

SUBJECT: 0.1PSI CHECK VALVES IN FLOAT BLOCK ASSY.

NUMBER: TIN004

MODELS COVERED: 89A1 (as required)
90B1 (as required)
90A1 (as required)
90A2 (as required)

Currently there are two types of Check Valves being used for the Float Block Assembly. One style is the p/n 400345 Check Valve and the other style is p/n 400510 Check Valve.

During an installation or service visit, all SYSTEM 1 Processors should have p/n 400345 in the CK1 position and p/n 400510 in the CK2 and CK3 positions. These Check Valves are to replace a variety of styles that may be currently installed in the SYSTEM 1 Processor Float Block Assy. The oldest style was p/n 400238 (plastic) which were prone to leakage. They were replaced by p/n 400262 (aluminum) which were prone to corrosion.

The p/n 400315 (Stainless Steel, S.S.) Check Valve looks identical to p/n 400345 (S.S.) Check Valve but p/n 400315 was prone to restriction. Both of these Check Valves have an orange inner o'ring, but it is not possible to distinguish the difference between them. The p/n 400510 (S.S.) Check Valves have a black inner o'ring that cannot be easily seen. Refer to instructions to replace the Check Valves in the Float Block Assy.

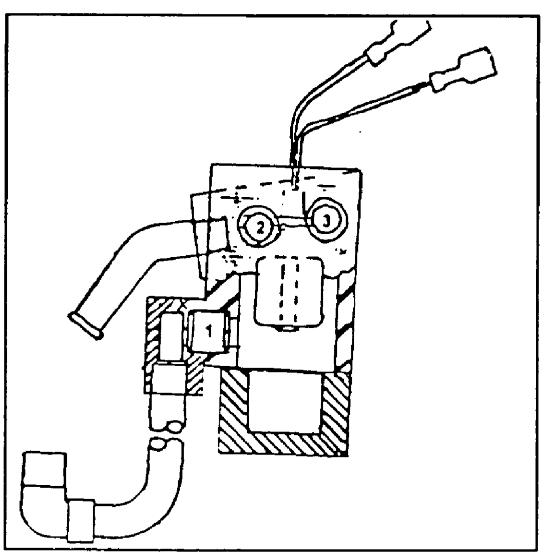


Figure 1

INSTRUCTIONS

1. Remove Sterile Air Filter. Loosen the hose clamps on black and green hoses attached to Float Block Assy.

2. Disconnect 2)wires and remove 4)retaining screws on back of Float Block Assy.

3. Remove black Drain Tube hose and slide Float Block Assy. out of green Drain hose.

4. Remove 2)retaining screws on (Air) block and replace CK1 Check Valve with a p/n 400345. See **Figure 1 - (1).**

5. Remove 4)retaining screws on (overflow) block and replace CK2 and CK3 Check Valves with a p/n 400510. See **Figure 1 - (2) and (3).**

6. Insure Check Valves are positioned correctly with

STERIS Corporation
Biomedical Training Program

OUTLINE of the STERILE PROCESSING CYCLE

1.	**PRESS START** CYCLE STARTS LS2 DETECTS 30 ± 3 psi LS5 DETECTS 40 ± 3 psi	LS4 CHECKED COMP1 ENERGIZED, PRINT HEADER OF PRINTOUT SOL4, SOL5, SOL7, HTR & P2 ENABLED COMP1 SHUT OFF
2.	**10 SECOND DELAY** DRAIN PINCH VALVE (V5) CLOSED WATER FLOWS PAST TC3 (up to 2 minutes) CORRECT TEMP DETECTED (or 2 minutes elapse) WATER BEGINS TO FILL SFH	SOL4 ENERGIZED SOL5 ENERGIZED TC3 (40 ± 2°C or greater) SOL5 DE-ENERGIZED SOL7 ENERGIZED SOL4 REMAINS ENERGIZED
3.	**5 SECONDS AFTER SOL7 ENERGIZED** CIRCULATION PINCH VALVE (V6) CLOSED (flow directed to spray nozzles only)	SOL3 ENERGIZED
4.	**30 SECONDS AFTER START OF FILL** CIRCULATION PINCH VALVE (V6) OPEN (chamber filling from sterilant compartment)	SOL3 DE-ENERGIZED (facilitates dispersing buffers)
5.	**CHAMBER FULL DETECTED** INLET WATER TURNED OFF OVERFILL TO DRAIN	LS3 SOL7 DE-ENERGIZED CK2 & CK3 FLOW
6.	**HEAT AND CIRCULATION BEGINS** DRAIN PINCH VALVE CLOSED (V5) CIRCULATION OF FLUID BEGIN HEATING FLUID (+ 30 seconds after circulation begins) TEMPERATURE MONITORED (checking for 50° C)	SOL4 ENERGIZED PUMP1 ENERGIZED HTR1 ENABLED TC1
7.	**FLUID TEMPERATURE > 50° C DETECTED** STOP CIRCULATING FLUID ALLOW BUBBLES TO RISE (6 seconds)	PUMP1 DE-ENERGIZED AND HTR1 DE-ENERGIZED
8.	**6 SECONDS AFTER TEMP > 50° C** RE-FILL CHAMBER (fixed 6 seconds) ADDITIONAL RE-FILL (up to 8 seconds)	SOL7 ENERGIZED IF REQUIRED (as detected by LS3)
9.	**20 SECONDS AFTER TEMP > 50° C** BEGIN CIRCULATION	PUMP1 ENERGIZED AND PUMP2 ENERGIZED
10.	**45 SECONDS AFTER TEMP > 50° C** BEGIN HEATING FLUID TEMP MONITORED (checking for 51.5° C)	HTR1 ENERGIZED TC1

(over)

STERIS Corporation
Biomedical Training Program

OUTLINE of the STERILE PROCESSING CYCLE
(continued)

11.	**FLUID TEMP REACHED (51.5° C)**	TC1
	READ CONCENTRATION	CP1 & CP2 (175 or greater)
	MONITOR CHAMBER FLUID LEVEL	LS3
12.	**12 MINUTE EXPOSURE PERIOD BEGINS**	
	MONITOR CHAMBER FLUID LEVEL	LS3
	MONITOR TEMP	TC1 & TC2
	MAINTAIN FLUID TEMPERATURE (53° C & 55° C); {50° C minimum; 60° C maximum}	HTR1 (controlled by TC1 & TC2)
	MONITOR CONCENTRATION	CP1 & CP2
13.	**12 MINUTES FROM START OF EXPOSURE PERIOD**	
	OPEN DRAIN PINCH VALVE (V5)	SOL4 DE-ENERGIZED
	CLOSE CIRCULATION PINCH VALVE (V6)	SOL3 ENERGIZED
14.	**40 SECONDS FROM START OF DRAIN**	
	CLOSE DRAIN PINCH VALVE (V5)	SOL4 ENERGIZED
	STOP PUMPING FLUID	PUMP1 DE-ENERGIZED
	BEGIN FILLING CHAMBER	SOL7 ENERGIZED
	CIRCULATE RINSE WATER (after chamber full condition is sensed by LS3)	PUMP1 ENERGIZED
15.	**10 SECONDS AFTER CIRCULATION BEGINS**	
	OPEN DRAIN PINCH VALVE	SOL4 DE-ENERGIZED
	CLOSE CIRCULATION PINCH VALVE (V6)	SOL3 ENERGIZED
	DRAIN CHAMBER	PUMP1 PUMP2

****************REPEAT #13 - #15 FOR A TOTAL OF 4 STERILE WATER RINSES****************

16.	**FOURTH RINSE CYCLE**	
	HIGH PRESSURE PUMP TEST	
	CLOSE DRAIN PINCH VALVE (V5)	SOL4 ENERGIZED
	TURN OFF HIGH PRESSURE PUMP	PUMP2 DE-ENERGIZED
	READ STATE OF HPP SWITCH	LS6 (contacts open)
	TURN ON HIGH PRESSURE PUMP	PUMP2 ENERGIZED
	READ STATE OF HPP SWITCH	LS6 (contacts closed)
17.	**CONTINUE DRAIN CYCLE**	
18.	**STERILE AIR DISPLACEMENT (60 SECONDS)**	
	WATER DISPLACED FROM CHAMBER	PUMP2 ENERGIZED
19.	**CYCLE COMPLETE**	
	COMPLETE LIGHT ILLUMINATED	
	6 EVENLY SPACED TONES	
	PRELIMINARY PRINTOUT	
20.	**CANCEL BUTTON DEPRESSED**	
	SEAL DEFLATES	SOL2 ENERGIZED (15 seconds)
	COMPLETION OF PRINTOUT	
21.	**GREEN READY LIGHT ILLUMINATED**	SOL2 DE-ENERGIZED

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OUTLINE of the DIAGNOSTIC CYCLE

1.	**DIAGNOSTIC BUTTON PRESSED**	LS4 CHECKED AIR COMPRESSOR INFLATES SEAL (UNDER CONTROL OF LS5) "HEADER" OF PRINTOUT COMPLETES
2.	**TEST #1 (A/D CONVERTER)**	CHECKS GROUND AND 5V DC POWER SUPPLY
3.	**TEST #2 (INLET TEMPERATURE)**	SOL4 AND SOL5 ENERGIZE; TC3 MONITORS TEMPERATURE FOR 20-180 SECONDS MUST BE > 43° C
4.	**TEST #3 (FILL TIME)**	SOL4 AND SOL7 ENERGIZE (SOL5 DE-ENERGIZE); WATER ENTERS CHAMBER; FP RECORDED WITHIN FIRST 20 SECONDS OF FILL; SOL7 MUST BE DE-ENERGIZED WITHIN 180 SECONDS FROM START OF FILL (AS DICTATED BY LS3).
5.	**TEST #4 (PRESSURE TRANSDUCER)**	SOL4 DISABLED FOR ONE (1) SECOND TO PRIME P1 AND THEN RE-ENERGIZED; P1 ENERGIZED FOR FOUR (4) SECONDS THEN DE-ENERGIZED; 25 SECOND PAUSE; FZ RECORDED OVER NEXT 60 SECONDS; FP & FZ CHECKED AGAINST LIMITS.
6.	**TEST #5 (CIRCULATION PRESSURE)**	P1 ENERGIZED FOR 30 SECONDS THEN PT1 RECORDS CP FOR NEXT 60 SECONDS OF CIRCULATION AS P1 REMAINS ENERGIZED; CP CHECKED AGAINST FZ.
7.	**TEST #6 (THERMOCOUPLE #1 AND #2)**	TC1 AND TC2 CHECKED TO BE WITHIN 3 DEGREES C (6 COUNTS) OF EACH OTHER
8.	**TEST #7 (CIRCULATION VALVE)**	SOL3 ENERGIZED PT1 READS AND STORES CZ (CIRCULATION ZERO)

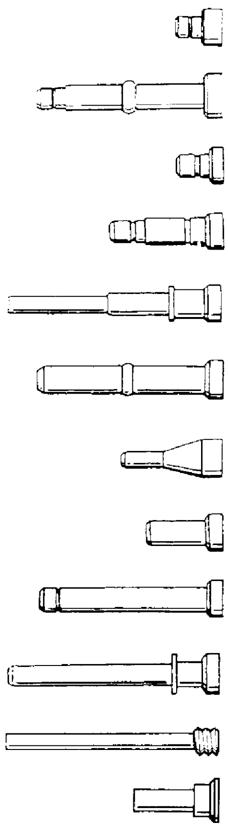
(over)

OUTLINE of the DIAGNOSTIC CYCLE
(continued)

9.	**TEST #8 (HEAT RATE)**	SOL3 DE-ENERGIZED; LS3 CHECKED "FULL" CONDITION . . . REFILL IF "NOT FULL" IS INDICATED; HEATER ENERGIZED. FOR 30 SECONDS AND TC1 IS READ AND TEMPERATURE RECORDED; 60 SECONDS OF ADDITIONAL HEATING TC1 READ AGAIN; THE TWO READINGS MUST REFLECT AN INCREASE OF 1° C OR GREATER. TEST #8 CAN BE REPEATED FOR TOTAL OF 4 TIMES
10.	**TEST #9(DRAIN VALVE)**	LS3 MONITORED FOR OPEN CONDITION.
11.	**TEST #10 (DRAIN TIME)**	SOL4 DE-ENERGIZE; SOL3 ENERGIZE; LS3 MUST CLOSE WITHIN 5 SECONDS.
12.	**TEST #14 (HP PUMP)**	SOL4 ENERGIZED; LS6 MONITORED FOR NO PRESSURE; P2 PUMP ENERGIZED, LS6 MONITORED FOR CLOSED CONDITION WITHIN 20 SECONDS; CONTINUE DRAIN FOR 40 SECONDS
13.	**TEST #11 (CONCENTRATION MONITOR)**	SOL4 DE-ENERGIZED; SOL3 DE-ENERGIZED· PUMP 1 AND PUMP 2 DISABLED; PROCESSOR READS CONCENTRATION MONITOR; 10K Ω RESISTOR ADDED TO CIRCUITRY; SECOND READING MADE OF CONCENTRATION MONITOR; STABILITY IN CIRCUIT CONFIRMED.
14.	**TEST #12 (STERILE FILTER MEMBRANE)**	PT1 CONTROLS COMPRESSOR; SOL8 ENERGIZED; CK4 SEATED AS AIR ENTERS FLT1 FOR UP TO 5 MINUTES.(40 ± 1 PSI DETECTED); COMP. REMAINS UNDER CONTROL OF PT1 FOR NEXT 5 MINUTES (STABILIZATION PERIOD); COMPRESSOR DISABLED; SOL3 AND SOL4 ENERGIZED (SEATS CK6) ; 15 SECOND PAUSE; 5 MINUTE MONITORING PERIOD BEGINS (PT1 MONITORS)
15.	**TEST #13 (DRAIN CHECK VALVE)**	SOL8 DE-ENERGIZED PT1 MONITORS PRESSURE REMAINING IN FLT1 AFTER 10 SECONDS OF AIR PRESSURE RELIEF; (10 - 30 COUNTS).
16.	**CONCLUSION**	SOL2 ENERGIZED (SEAL DEFLATES) PRINTOUT COMPLETED; GREEN READY LIGHT LIGHTS, SOL2 DE-ENERGIZED.

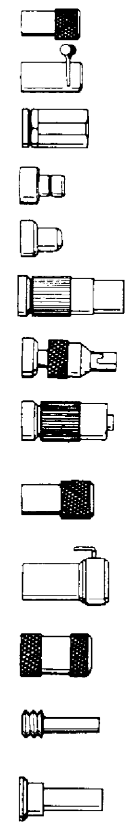
CUDA FIBEROPTICS

A—Lightsource Brand



(A) ACMI
(AO) ACMI/OLYMPUS
(W) WOLF DYONICS
(WX) WOLF EXTENDED
(S) KARL STORZ (5.0 MAXIMUM BUNDLE DIA.)
(O) OLYMPUS
(P) PILLING (3.5 MAXIMUM BUNDLE DIA.)
(D) DESIGNS FOR VISION
(M) MACHIDA
(PA) PENTAX
(U) UNIVERSAL
(Z) ZEISS

C—Instrument Brand



ACMI (F)
ACMI CLIP ON (FC)
ACMI SWIVEL (FS)
ACMI MALE (A)
DESIGNS FOR VISION (D)
OLYMPUS RETRACTABLE (ORF)
PILLING (P)
KARL STORZ (5.0 MAXIMUM BUNDLE DIA.) (S)
WOLF DYONICS EDER (W)
WOLF DYONICS CLIP (EXW)
SCHOLLY (SCH)
UNIVERSAL (U)
ZEISS (Z)

NOTE:
Other types of lightsource or instrument brand endfittings can be custom made

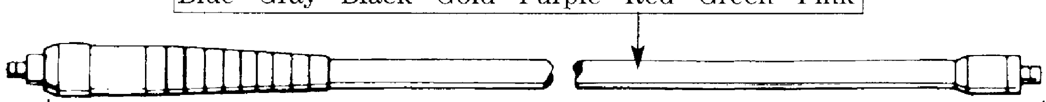
B—Fiberoptic Bundle Size (Diameter)

2 mm · 2.5 mm · 3 mm · 3.5 mm · 4 mm · 4.8 mm · 5 mm · 5.5 mm · 6mm · 6.5 mm

D—Length of Cable

The listed cable colors are available in fiberoptic bundle diameters of up to 5.0 mm

Blue · Gray · Black · Gold · Purple · Red · Green · Pink



180 CM (6 ft.) • 225 CM (7.5 ft.) • 275 CM (9 ft.)

For diameters above 5.0 mm Cuda blue or gray can be ordered.
Call factory for longer lengths/Please specify color when ordering

CAUTION: BURN AND/OR FIRE HAZARD
Do not place the light guide's distal end on the patient and/or any flammable materials (e.g., patient drapes, gauze, etc.) Light guide's distal end may transfer extreme heat while in use.

Note: If cable is to be used with a lightsource with a temperature reading which exceeds 650°F (343°C) the cable must have heat absorbing clad rod to withstand excessive heat. Specify when ordering.

Ordering Example: Model Number REDA3.5W180

A=ACMI Lightsource Brand (See Category "A") 3.5=Bundle size (See Category "B")
W=Wolf Instrument Brand (See Category "C") 180= Overall Length of Fiberoptic Cable (See Category "D")

CUDA FIBEROPTICS

AUTOCLAVING INSTRUCTIONS FOR FIBEROPTIC CABLES

Autoclave using one of the following methods:

1. **Standard gravity Sterilizer**-Wrap Fiberoptic cable in a surgical towel and place in a clean open tray. Sterilize for 30 minutes at 250°F at 15psi or 121°C at 1Kg/Cm^2 or minimum 18 minutes at 273°F at 15 psi or 134°C at 1 Kg/Cm
2. **High Speed Instrument (Flash) Sterilizer**-Wrap Fiberoptic cable in surgical towel and place in open tray. Sterilize for 3 minutes at 270°F at 30psi or 132°C at 2 Kg/Cm^2.
3. **Steris and Sterad Autoclaving**-This method is approved for sterilization of CUDA fiberoptic cables. All materials used in CUDA fiberoptic cable construction are designed to withstand acid sterilization. Keep in mind that epoxy commonly used in the construction of laparoscopes and fiberoptic cables is organic material, strong acids involved in the autoclaving process will attack the epoxy resulting in deterioration and possible need for re-epoxy after prolonged use of autoclave cycles. Use manufacturer's recommended instructions for using this type of equipment.
4. **ETO Sterilization**-With a pressure reading not to exceed 12 psi and a temperature not to exceed 155°F (68.3°C), the fiberoptic cable can be sterilized by ethylene oxide in any standard cycle. Concerning humidification, vacuum, cycle time, gas concentration and temperature, it is recommended that the manufacturer's instructions are followed. If a wrapping method is used (single-use wraps) and other instruments or materials accompany the fiberoptic cable in the same container, then aeration time may be addressed accordingly; without exceeding 155°F (68.3°C) the fiberoptic cable may be aerated for any time period while following the aerator manufacturer's temperature instructions.
5. **Soaking cables in Disinfectant**-Soaking cables for sterilization purposes is highly recommended as this method is not as harsh as autoclaving.
6. **Prevacuum Autoclaving**-CUDA fiberoptic cables will withstand Prevacuum autoclaving. Make sure to follow the manufacturer's instructions. There may be instances of air bubbles in the silicone when removing the cables from the autoclave. This is normal and will in no way reduce the life of the cable. The air bubbles will evaporate.

Pressure differential during steam autoclaving may cause small bubbles in the silicone tubing. The bubbles will not affect the fiberoptic cable and will dissipate with time.

Cleaning:

Should the fiberoptic cable become contaminated before use, clean thoroughly with a soft-bristled brush in a warm water/soap solution to remove possible contaminates.Use a non-oily cleaner or mild soap. Do not use synthetic detergents or oil-based soap, as these soaps may be absorbed and may subsequently leach out to cause a tissue reaction. Rinse thoroughly in warm water. Follow with a thorough rinse in distilled water and resterilize.

Prevent any scratching on the face of the endfitting which could result in light-transmitting losses.

Important points to remember:

1. The fiberoptic cable should be utilized without any alterations to its original design or fabrication. Meticulous care must be taken to avoid contact of any sharp edges or pointed objects with the fiberoptic cable; any inadvertent cut or puncture will possibly expose the optical fibers and render the fiberoptic cable unusable.
2. It is extremely important that the aperture (size) of the actual fiber bundle is matched with the instrument where it is being utilized to obtain maximum efficiency in light transmission.
3. Make certain that the autoclave is properly operating regarding maximum temperature. After removal of the fiberoptic cable, it should be cooled down very slowly (approximately 3-5 minutes) to room temperature. Do not immerse or rinse in cold water or any other fluid, to avoid glass fiber breakage. Extensive breakage will result in light transmitting losses.
4. Do not intermix fiberoptic cables with retractors or other sharp instruments on top of one another; they can cause extensive fiber breakage.
5. Do not abuse, kink, pull or stretch the fiberoptic cable. The glass optical fibers in the fiberoptic cable can be irreversibly damaged by careless handling, which could result in light transmitting losses.

In addition to our high quality products, we also provide custom services for the maintenance of all your products under warranty. We can provide free inspection and evaluation of your fiberoptic products which can be cleaned and repolished for a small fee.

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